THE IRON TRADE REVIEW

Volume XLVII CLEVELAND, AUGUST 4, 1910 Number 5

GREATER REDUCTION

In Production of Pig Iron.

Average Daily Make Smallest Since July of Last Year---Leading Interest Shows Confidence in Improvement.

Production of pig iron for July shows a continuation of the gradual reduction which has been taking place for some months. The output of the coke and anthracite furnaces for July was 2,164,954 tons, a loss of 123,325 tons, compared with June. July had one more working day, and the daily average was the lowest since July of last year, being 69,837 tons, compared with 76,276 tons in June. During last month, 22 stacks were blown out and eight blown in, making a net loss of 14 stacks from the active list in July. The present month will probably show a further curtailment of production, but it has not yet declined as much as seems to be required in order to stiffen prices.

Iron Ore

The iron ore movement from the Lake Superior region last month amounted to about 7,000,000 tons, a decrease of 300,000 tons compared with June. The foreign ore movement was unusually large during the last month, including 100,000 tons shipped by the leading interest in Cuba, and 75,000 tons from Europe, and 30,000 tons from Newfoundland. Lake Superior ore is moving very slowly to furnaces, and there are large accumulations on docks.

Pig Iron

Recent price concessions on pig iron in eastern territory have resulted in a fair amount of business being brought out. Following the recent sale of 10,000 tons of basic from a valley interest at $14, valley, a sale of a considerably smaller tonnage has been made at $14.10. A Canton, O., interest is inquiring for 10,000 to 12,000 tons of basic for delivery during the last four months of the year. The pig iron market in the central west and south is extremely quiet, prices showing little, if any, change.

Finished Material

In finished materials there has been softening of prices in some directions, but the leading interest has shown its confidence that conditions will improve by taking a firm stand against naming less than 1.40c, Pittsburg, on plates and shapes. The selling of steel bars at 1.40c, Pittsburg, is more general, but some interests are still declining to quote below 1.45c, and that price is prevailing on ordinary business with all of the leading companies. New wire business and specifications on wire and wire nails in July reached the highest total in any July in the history of several of the leading manufacturers, and contracts have been well distributed. The Jones & Laughlin Steel Co. has entered the market and is booking business for delivery in November from its new wire plant at Aliquippa, Pa. Fabricators of structural material are busy in all parts of the country. Many of them have large stocks on hand, from which they take care of ordinary business, and hence there is not very heavy contracting with steel companies. Domestic rail business for the season is practically over, and books have not been opened for next year's delivery. Prices on nuts and bolts are being shaded. Railroad buying during the past week has been light, the principal orders being for 900 tons of structural material for the Great Northern for ore spouts, awarded to the Minneapolis Steel & Machinery Co., and 700 tons for the Denver & Rio Grande, awarded to the American Bridge Co. The steel for the Cleveland Athletic Club building, 1,350 tons, will be supplied by the Cambria Steel Co.

Coke and Scrap

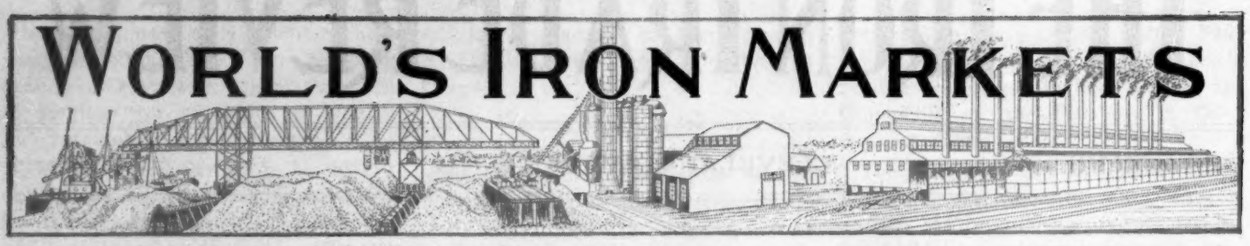
The production of coke in the Connellsville region continues at about 400,000 tons a week, and prices are firm with a tendency to make somewhat higher prices on foundry coke on contracts. A large independent sheet and tin plate company in the Monongahela valley has made a contract by which a large steel company will take its entire output of scrap, amounting to about 1,200 tons a month, for a term of years. This scrap has heretofore been a factor in the open market.

SEVEN MILLION TONS

Shipped from Lake Superior Mines—Approximate July Figures.

Ore shipments during July will not be sensibly less than June, when 7,316,592 tons were moved. With the shipments from two docks lacking, the fleet moved 6,220,166 tons during July. The docks not reporting so far are the two at Escanaba, which sent forward during June 767,618 tons, and which will probably send an equal amount during July. The July movement therefore approximates 7,000,000 tons. This movement has been accomplished without any trouble whatever and without the necessity of calling into commission any of the ships that are in voluntary reserve. In fact, it does not look as though the independent ships which had been retired would have a chance to do much business this year. Their services will certainly not be needed during August, as some of the vessel owners have already carried a portion of their August ore. Wild carriers are compelled to spend several days at the head of the lakes obtaining cargoes. The vessels are being handled with expedition at Lake Erie docks, though it is noted that the ore piles are growing.

WORLD'S IRON MARKETS



Pittsburg.

July Makes Better Record Than Expected—Steel Bar Price Reduced.

Office of THE IRON TRADE REVIEW,
510 Park Building, Aug. 2.

The local iron and steel trade made a better showing in July than was generally expected. In fact, some companies show a slight gain in certain lines in point of orders entered on mill books as compared with June. At the present time, there is no indication that the August record will be more encouraging than that of June, as there is not a great deal of new business developing at this time and consumers continue to buy in small lots for early shipment. However, the end of one of the midsummer months finds the local trade in fairly good shape.

One of the important developments of the week is the fact that steel bars, which have been held firmly at 1.45c, Pittsburg, when a tendency was shown to make lower quotations on other lines, can now be had at 1.40c, Pittsburg, or $1 a ton under the lowest price quoted heretofore, except to a few important customers. Notwithstanding that 1.40c has been done, the bulk of the new business during the week was placed at 1.45c, Pittsburg. There is moderate buying of hoops at 1.55c, and bands at 1.45c, the higher quotations having been abandoned. Bar iron is firm at 1.50c, Pittsburg.

The action of the Western Bar Iron Association members in following the lead of the Republic Iron & Steel Co. in signing the Amalgamated Association wage scale, and the action of the Amalgamated association in calling a special convention of sheet and tin mill representatives to consider the advisability of calling off the strike declared against the American Sheet & Tin Plate Co. on June 30, 1909, were the principal developments in this branch of the local industry.

It now develops that the deal referred to last week whereby a local company closed for its full requirements of sheet and tin bars, aggregating 8,000 tons a month, for a period of five years, also involves heavy tonnage of scrap. According to the terms of the deal the consumer of sheet and tin bars will turn the entire output of scrap, about 1,200 tons a month, over to one of the interests from which it will draw a portion of its supply of sheet and tin bars. Prices of semi-finished steel are about the same as last week.

Lower prices on wire and nails are bringing out much heavier tonnage and jobbers and consumers who were holding out for still lower prices are placing some large orders. There has been no car buying in this market and there is only moderate buying of plates. Local fabricating shops are busy and the structural market shows a little more activity in the way of small sales.

Consumers of pig iron are showing more interest, but little buying is noted. There is little trading in coke, but prices are firm.

Pig Iron.—Consumers apparently are showing more interest in the local pig iron situation and it is believed in some quarters that there has been a great deal more trading than has been made public. In all cases, however, the trading has been done in a quiet way and at low prices. Consumers continue to buy in small lots to cover early needs and it is not believed that they will make any effort to cover for their future requirements until there is a decided change in the local situation.

Alice furnace of the Valley Mold & Iron Co., at Sharpsville, Pa., has been placed on the inactive list. Two furnaces in the Wheeling district which have been out for some time will probably be started the latter part of this week or early next week. A new furnace in the Youngstown district will in all probability be blown in before Sept. 1.

Following the announcement last week of the sale of 10,000 tons of basic iron on a cash basis of $14, valley furnace, two or three consumers have put out inquiries with a view of sounding the market. One of these calls for from 1,000 to 1,500 tons for fourth quarter and another consumer is reported as being in the market for a much larger amount. There has been some selling of basic in small lots at $14.25, valley, for third quarter, and No. 2 foundry iron has been sold at the same figure for prompt and third quarter delivery.

The Bessemer market shows practically no change from last week. There is no new inquiry out and no sales have been reported. The general asking price remains unchanged at $15.50, valley. Demand for both malleable and gray forge is light.

The monthly average of pig iron prices, as announced for July, shows the average on Bessemer to have been $15.50, valley, or $16.40, Pittsburg, as compared with $15.62, valley, or $16.52, Pittsburg, for June. The basic average for July was $14.50, valley, or $15.40, Pittsburg, against $14.70, valley, or $15.60, Pittsburg, for the preceding month. The monthly average price for May was $16.203, valley, or $17.103, Pittsburg, on Bessemer, and $15.044, valley, or $15.944, Pittsburg, on basic.

Pig Iron Prices.

(Prompt Shipment.)

Bessemer, valley	$15.50
Bessemer, Pittsburg	16.40
Basic, valley	14.25
Basic, Pittsburg	15.15
No. 2 foundry, Pittsburg	15.15
Gray forge, Pittsburg	14.65
Malleable, Pittsburg	15.90

(Third Quarter.)

Bessemer, valley	$15.50
Bessemer, Pittsburg	16.40
Basic, valley	14.25
Basic, Pittsburg	15.15
No. 2 foundry, Pittsburg	15.15
Gray forge, Pittsburg	14.65
Malleable, Pittsburg	15.90

Ferro-Alloys.—Some of the inquiries for ferro-manganese have been withdrawn and little trading is noted. Notwithstanding that there has been practically no buying in this district, prices appear to be slightly firmer, and it is doubtful whether $39.50, Baltimore, could be shaded on third quarter business. The 50 per cent ferro-silicon market continues quiet with little inquiry and practically no sales.

We quote, ferro-manganese at $39.50, Baltimore, for third quarter, and $39.75 to $40 for second half. The freight rate from Baltimore to Pittsburg is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $58, Pittsburg; domestic 12

per cent, $26.90; 11 per cent, $25.90; 10 per cent, $24.90, Pittsburg, for third quarter, and $1 advance for last half. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—No action has been taken as yet on the 20,000 tons of plates to be used in the new water pipe line system in Los Angeles, Cal., and 8,000 tons for similar work at Portland, Me., and other new projects outlined recently. Most of the local plants, however, have a large amount of business on their books, which will keep them busy for two or three months, but there is not a great deal of new business developing. Specifications continue satisfactory, orders entered on mill books during July being slightly lower than for the previous month. No new car orders have developed, although it is understood that two or three of the large trunk lines are figuring on some new equipment. The major portion of new business is being placed at 1.40c, Pittsburg, although some plants are still getting 1.45c, Pittsburg. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.40c to 1.45c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.20c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½ inch to and including 3-16 inch plate on thin edge, 0.10c; under 3-16 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—Inquiry for sheets is slightly heavier and the nature of the new business coming out is more encouraging to makers. While actual bookings are not large, they are heavier than for some weeks and production has been slightly increased. The Saltsburg, Pa., plant of the American Sheet & Tin Plate Co. was closed Monday of this week and the Leechburg, Pa., plant of the same company, which had been idle for some time, is now in operation. Shipments to automobile manufacturers continue heavy, and, as far as can be learned, there has been no shading of prices on blue annealed sheets. Shading of $3 in prices of black sheets and $4 on galvanized sheets continues. Notwithstanding that an official card has not yet been issued giving lower prices on black and galvanized sheets, we quote the prices at which sales are being made. In view of the fact that cutting of prices is not so pronounced in some districts, we quote a reduction of from $2 to $3 on black sheets and $3 to $4 on galvanized sheets. Present sheet prices, Pittsburg base, are nominally as follows, with $1 a ton added as the delivered price in the Pittsburg district:

Blue annealed sheets, Nos. 3 to 8, 1.70c; Nos. 9 and 10, 1.75c; Nos. 11 and 12, 1.80c; Nos. 13 and 14, 1.85c; Nos. 15 and 16, 1.95c; box annealed sheets, Nos. 10 and 12, 1.90c to 1.95c; Nos. 13 and 14, 1.95c to 2c; Nos. 15 and 16, 2c to 2.05c; Nos. 17 to 21, 2.05c to 2.10c; Nos. 22 to 24, 2.10c to 2.15c; Nos. 25 and 26, 2.15c to 2.20c; No. 27, 2.20c to 2.25c; No. 28, 2.25c to 2.30c; No. 29, 2.30c to 2.35c; No. 30, 2.40c to 2.45c; galvanized sheets, Nos. 12 to 14, 2.30c to 2.35c; Nos. 15 and 16, 2.40c to 2.45c; Nos. 17 to 21, 2.55c to 2.60c; Nos. 22 to 24, 2.70c to 2.80c; Nos. 25 and 26, 2.90c to 2.95c; No. 27, 3.10c to 3.15c; No. 28, 3.30c to 3.35c; No. 29, 3.40c to 3.45c; No. 30, 3.65c to 3.70c; painted roofing sheets, $1.60 to $1.65 per square for No. 28 gage, 2½-inch corrugation, and galvanized roofing sheets, $2.85 to $2.90 per square for No. 28 gage, 2½-inch corrugation.

Tin Plate.—Conditions surrounding the tin plate market continue to be entirely satisfactory from an operating standpoint. Actual bookings for third quarter and last half are not as heavy as in May and June, and this is probably due to the fact that consumers generally are well covered for this period and only a few of the mills are in a position to take on additional tonnage for delivery prior to Jan. 1, 1911. The Demmler, Allegheny county, Pa., plant of the leading interest, which has been idle for some time, undergoing repairs, resumed operation Monday of this week. Other mills which were down for repairs will resume operations shortly. Shipments all through July were extremely heavy and prices are being maintained. The base price on tin plate is as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.60, f. o. b. mill, Pittsburg district.

Rails and Track Material.—Standard and light rail orders entered on mill books during July exceeded those of the previous month by a fair margin and the indications are that the August record will make a good showing from an operating standpoint. Several orders ranging from 150 tons to 1,000 tons of standards were booked during the week by the leading interest and the Edgar Thomson works are operating on a more satisfactory basis than for some months. The market on light rails is showing considerable activity for this season of the year. Makers of track bolts likely would shade 2.40c on desirable business, as bookings have fallen off somewhat. Orders for spikes placed during the week show a slight gain. We quote Bessemer rails as follows, the base price on open-hearth rails being $30, mill:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; light rails on base weight of 40 to 45 pounds, $27, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburg; standard spikes, 1.75c, Pittsburg; hand spikes, 1.80c to 1.85c, Pittsburg; track bolts, 2.40c, Pittsburg.

Steel.—Notwithstanding that users of Bessemer and open-hearth semi-finished steel are confining their purchases to small lots and are postponing buying for future requirements, prices are holding fairly firm. The most important development in this line in several months was the deal closed by a large independent consumer in this district for its full requirements of sheet and tin bars, aggregating approximately 8,000 tons a month for a period of five years, mention of which was made last week. It now develops that some of this tonnage figured in an exchange deal, as one of the producing interests has contracted to take the bulk, if not all, of the scrap of the sheet tin bar consumer. Reports that Bessemer billets have been sold under $25, makers' mill, are not confirmed. No sales of Bessemer sheet bars have been reported under $26, makers' mill. Additional sales of forging billets on a basis of $30, Pittsburg, are noted.

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $25, Pittsburg, with the usual extras for size and analysis, and open-hearth rolling billets, $26.50, Pittsburg. Forging billets are quotable at $30.00, Pittsburg. Bessemer sheet and tin bars are quoted at $26, and open-

hearth sheet bars are quoted at $28, at makers' mill, located within the $1, Pittsburg, freight limits.

Hoops and Bands.—There is only moderate buying of hoops and bands, although consumers are specifying in a satisfactory manner. It is doubtful whether any makers are getting 1.60c on hoops, although 1.55c, Pittsburg, is not being shaded. On bands, the 1.50c quotation has been abandoned and 1.45c represents the market level. We quote the market as follows:

Hoops in carload lots, 1.55c; in less than carload lots, 1.70c; bands, 1.45c, base, with net extras, as per standard steel.

Merchant Bars.—During the past week 1.40c, Pittsburg, on steel bars has been done in two or three instances on particularly desirable business, but 1.45c, Pittsburg, is the general asking price and considerable tonnage has been placed at the latter figure. Actual bookings have fallen off somewhat and the average delivery period at most plants ranges from five to six weeks. The price of bar iron is holding firm at 1.50c, Pittsburg, although there is not a great deal of new business being booked. The Western Bar Iron Association members followed the lead of the Republic Iron & Steel Co. and signed the Amalgamated Association wage scale during the week. Production at present is heavier than for some time. We quote the market as follows:

Common iron bars, 1.50c, Pittsburg, Bessemer and open-hearth steel bars, 1.40c to 1.45c; plow and cultivator, 1.40c to 1.45c; channels, angles, zees, tees, under 3-inch, 1.50c to 1.55c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 55 per cent in carloads and 50 per cent in less than carloads, delivered in base territory.

Structural Material.—Increased activity in structural steel lines, as far as small orders are concerned, is noted and local fabricating plants are running full time with sufficient business on their books to insure steady operation for some time, but no large awards have been made in this district. There is a great deal of estimating on new work, which assures greater activity during the later months of the year, although work on a number of the larger projects is being held up. In a few exceptional cases, some makers are still getting 1.45c, but the bulk of the new business is being placed at 1.40c, Pittsburg. We quote the market as follows:

Beams and channels, 15 inches and under, 1.40c to 1.45c; over 15 inches, 1.50c to 1.55c; zees, 1.40c to 1.45c; tees, 1.45c to 1.50c; angles, from 3 to 6 inches, 1.40c to 1.45c; over 6 inches, 1.50c to 1.55c; universal and sheared plates, 6¼ inches wide and wider, 1.40c to 1.50c.

Merchant Pipe.—Most of the mills making large pipe are in a very comfortable position as far as business for the next two or three months is concerned, and there is a large amount of new work appearing, although no large awards have been made in this district during the week. In addition to the inquiries noted recently, which are still pending, makers of pipe have learned of additional large projects which will involve heavy tonnage of large pipe, contracts for which, in all probability, will be awarded this month. The local gas companies, which are figuring on approximately 100 miles of 10, 12 and 16-inch steel pipe, are expected to place their orders this week. Jobbers' stocks are moving out more freely, but only moderate buying from this source is reported by makers. Demand for iron pipe is light and shading of prices in some districts is reported. We quote the following official discounts in carload lots, subject to the usual preferential discount to the larger buyers, merchant pipe, where specified, being offered in from ⅛ to 6 inches.

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch.....	70	54	66	..
⅜ inch	71	57	67	53
½ inch	74	62	70	58
¾ to 6 inch.....	78	68	74	64
7 to 12 inch.....	72	57	68	53
13 to 15 inch.....	51½	..	..	..
PLUGGED AND REAMED.				
1 to 4 inch.....	76	66	71	61
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch.....	63	51	58	46
½ to 4 inch.....	70	58	65	53
4½ to 8 inch.....	66	54	61	49
9, 10, 11 and 12 inch	59	47	54	42
DOUBLE EXTRA STRONG PLAIN ENDS.				
½ to 8 inch.....	59	48	54	43

Boiler Tubes.—Specifications against running contracts for merchant and locomotive boiler tubes are fairly satisfactory to makers, but total bookings for July show a decline as compared with the previous month. Makers are looking forward to greater activity within the next 60 days.

	Steel.	Iron.
1 to 1½ inch	49	43
1¾ to 2¼ inch.....	61	43
2½ inch	63	48
2¾ to 5 inch.....	69	55
6 to 13 inch.....	60	43

2½ inch and smaller, over 18 feet, 10 per cent net extra.

2¾ inch and larger, over 22 feet, 10 per cent net extra.

To destination east of the Mississippi river will be sold at delivered discount for carloads lowered by two points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburg.

Wire Products.—There has been a noticeable increase in bookings of wire and wire nails during the week on account of the lower prices announced a few weeks ago. However, the lower quotations have not developed the volume of business expected by makers. Some of the jobbers and consumers who were holding out for still lower prices apparently believe that no further action along this line will be taken for the present at least and are buying in small lots. Reports that quotations of 1.70c on wire and cut nails have been shaded are officially denied. We quote the market as follows, contracts for the jobbing trade being limited usually to 60 days.

Wire nails, jobbers' carload lots, $1.70; retailers' carload lots, $1.75; painted barb wire, jobbers' carload lots, $1.70; retailers' carload lots, $1.75, with 30c for galvanizing; plain wire to jobbers in carloads, $1.50, and to dealers, in carloads, $1.55; polished staples, $1.70; galvanized staples, $2.

Wire Rods.—Specifications against running contracts are probably a little heavier than during the first week of July and the lower quotations have brought out a fair volume of new business. We quote $29, Pittsburg, on Bessemer and open-hearth rods.

Coke.—Conditions surrounding the coke market are about the same as a week ago. Production in the Connellsville region remains at about 400,000 tons a week; prices are firm; buying is confined to small lots for early needs; cars are plentiful; the trade is without field troubles; there are no complaints of lack of water, and there is no shortage of workmen. A sale of 50 cars of furnace coke on a basis of $1.70, ovens, for prompt shipment is noted. However, quotations as low as $1.60, ovens, have been made, although most sellers are asking from 10 to 15 cents a ton higher. There is little trading in furnace coke for last half shipment. Sellers of foundry coke report a fair volume of business for last half, although this market is not as active as a month ago. At the present time, production is about equal to actual consumption and there is not a great deal of coke in the yards. The Standard Sanitary Mfg. Co., Pittsburg, has not yet closed on its inquiry for 12,000 tons of foundry coke for delivery over the year to July 1, 1911. Two or three other inquiries for fairly large amounts are pending. We quote standard Connellsville furnace coke for prompt delivery at from $1.60 to

$1.75, ovens, and on contract, we quote from $1.80 to $1.90, ovens. On high grade Connellsville foundry coke, we quote from $2.10 to $2.25, ovens, for prompt delivery. On contract, we quote from $2.25 to $2.50, ovens. The Connellsville *Courier's* figures for the week ending July 23 show 29,430 ovens active with an output of 406,507 tons, compared with 29,357 active ovens and a production of 404,543 tons the previous week.

Old Material.—Perhaps the most important development in this market during the week was the announcement that a large independent sheet and tin plate company in the Monongahela valley has closed a deal whereby a large steel company will take its entire output of scrap, aggregating about 1,200 tons a month, for a term of years. This scrap was formerly handled in the open market. Aside from the scattered sales of small lots of scrap, there has been comparatively little trading in this market. Shipments are probably a little heavier, owing to the fact that a number of plants have resumed operation after having been idle for some weeks. Heavy melting steel has been sold as low as $14, while some dealers are getting $14.50. A reduction of 50 cents a ton is noted in the price of old iron rails, which are now quoted at from $15 to $15.50. Slightly higher prices have been realized on machine shop turnings and cast borings. We quote, gross tons, delivered in the Pittsburg district, including Monessen, Sharon, Steubenville, Brackenridge and Follansbee as follows:

Heavy melting scrap	$14.00 to 14.50
Rerolling rails	15.75 to 16.25
Bundled sheet scrap	10.50 to 11.00
Iron axles	24.50 to 25.00
Old iron rails	15.00 to 15.50
No. 1 wrought scrap	14.50 to 15.00
Old car wheels	14.50 to 15.00
Low phosphorus	17.50 to 18.00
Machine shop turnings	9.00 to 9.50
Cast borings	8.00 to 8.50
No. 1 cast scrap	14.50 to 15.00
Malleable	14.50 to 15.00
Stove plate	10.25 to 10.75

Chicago.

Jobbers Reduce Store Prices of Sheets —Summer Dullness Prevails.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Aug. 2.

The iron and steel market is passing through a period of comparative inaction, which is not an unusual experience, but rather one that is expected each summer, usually in July and August. No buying movement of any consequence has developed in the Chicago pig iron market, although the total sales in this territory during the week would probably be found not far under 10,000 tons. It is not to be understood that these sales were made to melters within the immediate city limits, but within territory covered by sales agencies in this city. Finished material holds its own fairly well, considering the holiday character of the season, and it is reported that in one line at least, that of wire products, the lower prices recently announced have resulted in renewed business. Following the action taken a week ago in prices on bars, structurals and plates out of store, the local jobbers on Aug. 1 made a reduction in sheets, ranging from $2.00 to $4.00 per ton, on blue annealed, black and galvanized. The new axle mill of the Indiana Steel Co., at Gary, is in operation, but running very slowly, and in an experimental way. The billet mill and rail mill at that plant also are running light; only four of the blast furnaces are in blast.

Pig Iron.—The long looked-for buying movement in pig iron circles has not materialized, but at the same time, there have been a few scattered sales made by agents and brokers, which represent a tonnage rather in excess of average weeks in the past few months. If it were possible to arrive definitely at an accurate knowledge of the amount of pig iron sold in the territory represented by Chicago houses during the past week, it is likely that the amount would fall not far short of 10,000 tons. There is a tendency to defer purchasing as long as possible so as to take advantage of the low prices which are current, and of the lower ones which are hoped for. At present, there are no well defined limits as to prices on any grade of pig iron in the Chicago market, but the tendency has been to get a little nearer to rock-bottom figures. For the remainder of the year, there are some furnaces that are making a price of $11.00, Birmingham, while a large number still hold at $11.50, and a smaller number at $12.00. Northern foundry is very inactive and prices are nominal. During the past week, there has been an inquiry from a Michigan stove interest for over 5,000 tons of northern and southern foundry iron for delivery during the first half of 1911. This inquiry was admittedly a tentative one and so far as learned, did not awaken any enthusiasm on the part of sellers, or bring out any prices satisfactory to the inquirer. The same interest bought 1,000 tons of 4 to 5 per cent silicon iron at prices which were said to be concessions over current quotations. There have been quite a number of feelers thrown out to test the market for 1911 business, but furnace interests are not willing to make any propositions based on the present low level of prices. The attitude of the sellers is that the propositions submitted by melting interests for any business for the first half of 1911 are "too long on delivery and too short on prices." The following quotations, while nominally for the third quarter of the present year, may fairly be taken to represent the level at which business could be placed for the balance of 1910.

Lake Superior charcoal	$ 18.50
Northern foundry No. 2	16.50 to 16.75
Southern foundry No. 2	15.35 to 15.85
Southern silveries, 5 per cent silicon	16.85 to 17.35
Jackson Co. silveries, 8 per cent.	20.40
Malleable Bessemer	16.50 to 16.75
Alabama Basic	15.35 to 15.85

Billets.—The general situation as to billets is practically the same as in past weeks, the local makers supplying their regular customers with forging billets, and only occasionally having a surplus for business which develops from time to time. In this respect, Chicago has been dependent for its transient supply of billets on eastern markets, principally Pittsburg. This condition is gradually changing, and when the Gary mills have reached a point of greater capacity and the Inland Steel Co. gets its two new open-hearth furnaces in operation, Chicago will be an independent market for billets and not be dependent on Pittsburg as a basing point. Open-hearth forging billets are selling in the Chicago district at $29, base, and rolling billets about $2 under that figure.

Merchant Bars.—The mills in this district making bars, both iron and steel, are fairly well employed on old specifications with new business somewhat light. One of the leading roads which was mentioned in this paragraph some weeks ago as being in the market for a large tonnage of bars and other material has not closed as yet for its requirements. Sales of steel bars on a basis of $1.40, Pittsburg, have been reported, but the business has been handled very quietly and none of the mills is willing to admit that it has done anything better than $1.45, Pittsburg, or an equivalent of $1.63, Chicago. The agricultural implement makers practically closed their contracts for bars a month ago, and specifications from this source are coming in freely.

We quote, for Chicago delivery, as follows: Bar iron, 1.37½ to 1.42½c; hard steel bars, re-rolled, 1.50c to 1.60c; soft steel bars and bands and small shapes, 1.58 to 1.63c, base; hoops, 1.78c to 1.88c; planished or smooth finished tire steel, 1.83c to 1.88c; iron finish, up to 1½ by 1½ inch, 1.78c, base, tire card; iron finish, 1½ by ½ inch and larger, 1.63c, base,

bar card; channels for solid rubber tires, ¾ to 1 inch, 2.13c, flat, and 1⅛ inch and larger, 2.03c, flat; smooth finished machinery steel, 1 inch and larger, 2.43c; flat sleigh shoe, 1.73c; toe calk, 2.23c; spring steel, 2.28c; crucible spring steel, 2.78c; tool steel, 7c to 9c, with higher prices for special grades. Quotations on shafting are 55 per cent off the list for carload lots, and 50 per cent off for less than carload lots, carload freight allowed to points in base territory.

On iron and steel bars from local stocks, we quote as follows: Bar iron, 1.80c to 1.90c base; soft steel bars, 1.80c to 1.90c per 100 pounds base; soft steel hoops, 2.30c to 2.40c; full extras.

Structural Material.—Practically no large fabricating contracts were closed during the past week, owing probably to the disturbance in the stock market, and the severe slump in many of the issues which always has a disturbing effect on projects involving large amounts of money. The plans for the Dime Savings Bank building at Detroit, and the Marshall Field warehouse in this city, are being revised, and figures will be called for in a few days. An unusually large number of smaller contracts was closed during the week in the western territory, amounting to 7,000 or 8,000 tons, of which the leading interest took a larger number than any other fabricating interest; among these were the shops of the Western Pacific railway, requiring 630 tons; also the Solano county, Cal., court house, 250 tons; wharfshed for army supplies at Ft. Mason, Cal., 630 tons; the columns for the Fisher building, at Denver, 175 tons. The Union Pacific Headquarters building, at Omaha, 2,500 tons, went to the Noelke-Richards Co., Indianapolis. The C., B. & Q. freight house at Omaha, 390 tons, was taken by the Paxton-Vierling Iron Works, of that city. The Orpheum theater, at Peoria, 305 tons, went to the Joliet Bridge Co. Ore spouts for the Great Northern railway docks at Allouez Bay, requiring 910 tons, went to the Minneapolis Steel & Machinery Co. The power house of Leadville, Colo., for the Empire Zinc Co., 200 tons, and machine shops for the Calumet National Copper Co., 550 tons, were taken by the Worden-Allen Co. The contract for additional shops for the National Brake & Electric Co., Milwaukee, 465 tons, was taken by the Wisconsin Bridge Co. A local foundry at St. Louis secured the freight house of the M., K. & T. Ry., 260 tons. A power house for the electric light company at Wichita, Kans., 250 tons, was awarded to the Indiana Bridge Co. A power house at San Diego, Cal., requiring 250 tons, was secured by the Pacific Rolling Mills, of San Francisco. The Pennsylvania Steel Co. closed contracts for considerable viaduct work for an industrial road.

We quote, mill prices, for structural shapes, Chicago delivery, as follows:

Beams and channels, 15 inches and under, 1.58c to 1.63c. For extras, see Pittsburg report.

Local store prices are as follows: All angles, 3 inches and larger, including 6 inches, $1.80 to $1.90 per 100 pounds; angles over 6 inches, $1.90 to $2 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.80 per 100 pounds, base; channels, 3 inches and larger, $1.80 per 100 pounds, base.

Rails and Track Supplies. — No standard section steel rails were sold by the local mill, but track fastenings of various kinds came in for a large share of attention. The Pennsylvania Steel Co. secured considerable track work for electric railways, and booked specifications for street railway rails, amounting to 500 tons.

See Pittsburg report for prices on standard sections.

On light rails, Chicago delivery, we quote as follows: Light rails, 35, 40 and 45-pound, $26; 16, 20 and 30-pound, $27; 12-pound, $28.

Light section re-layers, 45 pounds and under, subject to inspection, $21 to $23; standard section re-laying rails, subject to inspection, $23.50 to $24.00.

Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.70c to 1.80c; smaller size spikes, 1.75c base; track bolts with square nuts, 2.25c to 2.35c, base.

Plates. — The market shows no change in any of its features and prices are maintained at previously quoted figures.

We quote, Chicago delivery, as follows:Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.58c to 1.63c. For extras, see Pittsburg report.

Store quotations are without change, as follows: Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.80c to 1.90c; from 72 inches to 96 inches wide, 1.90c to 2c; 3/16 inch up to and including 60 inches wide, 1.90c to 2c; 72 inches, 2.15c to 2.25c; No. 8, up to 60 inches wide, 1.95c to 2.05c. Flange and head quality, 25c extra.

Sheets.—A readjustment of prices was announced Aug. 1, by local jobbers to meet the price condition in other centers, and also to take cognizance of the concessions which have been made from time to time by mill and warehousemen. The readjustment in store prices consists of a reduction of $2.00 a ton on blue annealed sheets, $3.00 a ton on black sheets, and $4.00 on galvanized. The local mill is running full on business already in hand, but new business does not develop as freely as could be wished.

For mill prices, see Pittsburg report. Freight to Chicago, 18 cents.

We quote store prices at Chicago as follows: No. 10, 2.10c to 2.20c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; Nos. 18-20, 2.65c to 2.75c; Nos. 22-24, 2.70c to 2.80c; No. 26, 2.75c to 2.85c; No. 27, 2.80c to 2.90c; No. 28, 2.85c to 2.95c; No. 30, 3.15c; galvanized sheets, Nos. 10 to 16, 3.00c to 3.10c; Nos. 18 and 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.40c; No. 26, 3.50c to 3.60c; No. 27, 3.70c to 3.80c; No. 28, 3.90c to 4.00c; No. 30, 4.30c to 4.40c.

Wire Products.—The lower level of prices recently reached has had the effect of bringing out considerable new business, and specifying also has been heavier. The outlook at the present time is reported to be very good.

We quote, Chicago delivery, as follows:

Wire nails, jobbers' carload lots, $1.93; retailers' carload lots, $1.98; retailers' less than carload lots, $2.08; painted barb wire, jobbers' carload lots, $1.93; retailers carload lots, $1.98; retailers' less than carload lots, $2.08; with 30c for galvanizing; plain wire to jobbers, $1.73; plain wire, retailers' carload lots, $1.78; staples, bright, $1.93.

Merchant Pipe and Tubes.—Business in tubular goods has been of about the same character as reported for a number of weeks. The tonnage from mills is not very heavy at this time, but local store business is fair.

For mill discounts see Pittsburg report.

We quote, out of store, as follows: Wrought steel pipe, black ⅛ inch to ¼ inch, 67.2 per cent; ⅜ inch, 68.2 per cent; ½ inch, 71.2 per cent; ¼ inch to 6 inches, 75.2 per cent; 7 inches to 12 inches, 68.2 per cent. Iron pipe, about 5 points higher.

Lap weld steel tubes, 2¾ inches to 5 inches, 60 to 62 per cent; charcoal iron tubes, 2¼ inches to 4 inches, 48 to 50.

Cast Iron Pipe.—Nothing beyond routine business is reported from the cast iron pipe foundries this week, as the few municipal lettings which were in the market have been held up for the time being. Nominal prices are unchanged.

We quote, prices f. o. b. Chicago, as

follows: Four-inch water pipe, $28; 6 to 16 inches, $27; larger sizes, $26; gas pipe, $1 a ton higher.

Old Material.—The market for scrap iron and steel drags along in the same rut as for many weeks and may be expected to continue in the same way until there is a revival among the steel and iron mills. Prices have gradually receded and each day, almost, sees some further concession made. The one good point in the whole situation is that the railroads have been able to dispose of a number of small lots of scrap without bringing about any serious decline in prices.

We quote, gross tons, as follows:

Old car wheels	$13.50 to 14.00
Old iron rails	16.50 to 17.00
Rerolling rails (5 ft. and over)	15.50 to 16.00
Old steel rails (3 ft. and under)	13.25 to 13.75
Frogs, switches and guards	12.25 to 12.75
Heavy melting steel	12.25 to 12.75
Shoveling steel	11.75 to 12.25

We quote, net tons, as follows:

No. 1 R. R. wrought	$12.00 to 12.50
No. 2 R. R. wrought	10.75 to 11.25
Arch bars and transoms	15.00 to 15.50
Knuckles, couplers and springs	11.50 to 12.00
Shafting	17.00 to 17.50
Iron car axles	19.75 to 20.25
Steel car axles	19.75 to 20.25
Locomotive tires	17.50 to 18.00
Dealers' forge	11.00 to 11.50
Pipes and flues	9.25 to 9.75
No. 1 cast, 150 lbs. and less	12.50 to 13.00
No. 1 busheling	10.25 to 10.75
No. 2 busheling	8.00 to 8.50
No. 1 boiler cut	9.50 to 10.00
Boiler punchings	14.50 to 15.00
Cast and mixed borings	4.50 to 5.00
Machine shop turnings	7.00 to 7.50
Railroad malleable	11.00 to 11.50
Agricultural malleable	10.50 to 11.00
Stove plate and light cast scrap	11.00 to 11.50
Angle bars, splices, etc. (iron)	13.75 to 14.25
Angle bars, steel	12.00 to 12.50

Cleveland.

Canton Interest Inquires for Basic—Some Softening of Bar Prices.

Office of THE IRON TRADE REVIEW,
Penton Building., Aug. 2.

Iron Ore.—Returns of ore shipments for July have been received from only a few ports, but indicate a very heavy movement. It is not expected that August will have as heavy a movement as either of the two preceding months, as furnaces are taking ore very slowly, and the outlook is that the production of pig iron will be curtailed. Efforts of eastern furnaces to obtain concessions on ore prices on account of the action of an eastern furnace in offering to re-sell 6,000 tons of non-Bessemer Mesabi ore have been futile. There is not the slightest probability that any price concessions will be made.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $5; Mesabi Bessemer, $4.75; old range non-Bessemer, $4.20; Mesabi non-Bessemer, $4.

Pig Iron.—The only inquiry of any consequence pending is for 10,000 tons of basic for last quarter from a Canton, O., interest. Cleveland foundries, especially those making small castings, are very busy, and some of them report that they are unable to get enough molders. At some foundries, difficulty is experienced in making deliveries of castings to automobile concerns, which have given orders to suspend shipment for from 30 to 60 days, and it is uncertain whether the castings will be taken at the end of this period of suspension. For the remainder of the year we quote, delivered in Cleveland, as follows:

No. 1 foundry	$15.50 to 15.75
No. 2 foundry	14.50 to 14.75
No. 2 Southern	15.35 to 15.85
Gray forge	14.00 to 14.25
Bessemer	16.25 to 16.40
Lake Superior charcoal	18.50 to 19.00
Jackson Co. 8 per cent silvery	19.50 to 20.00

Coke.—While there is still some contracting for foundry coke, there is not as much activity as two or three weeks past. There is, however, a disposition on the part of more interests to advance quotations to $2.50 for last half foundry coke. We quote, Connellsville furnace coke at $1.60 to $1.70 for prompt delivery, and $1.80 to $1.90 for last half. Connellsville foundry prompt, we quote at $2.15 to $2.25, and last half $2.25 to $2.50.

Finished Material.—There has been a gradual softening of prices on finished materials, but the leading interest is standing firmly for 1.40c Pittsburg on shapes and plates, and does not expect to lower that quotation this summer. On the part of some interests, quoting of 1.40c Pittsburg on steel bars is more general, but is not quoted on small lots or to all customers. Some interests have not yet quoted 1.40c except to agricultural concerns. The Empire and Union rolling mills have accumulated a considerable tonnage of orders for iron bars, and are now operating. A contract for 1,000 tons of structural material, including some plates, will in all probability be awarded to the leading interest within a few days. The contract for the Cleveland Athletic Club addition to the Brown building, 1,350 tons, was awarded to the Cambria Steel Co. Very little structural business to be placed at any time in the near future is now pending, but fabricating shops are fairly busy and have stocks enough on hand to provide for the erecting of ordinary small jobs.

Old Material.—The market for scrap in this district continues apathetic. Prices so far as they can be determined, have not changed much in the last two weeks, but a reduction of 50c will be noted in the price of pipes and flues. We quote, gross tons, f. o. b. Cleveland, as follows:

Old iron rails	$16.00 to 16.50
Old steel rails (under 6 feet)	14.00 to 14.50
Old car wheels	13.00 to 13.50
Old steel boiler plate	11.50 to 12.00
Malleable iron (railroad)	12.75 to 13.25
Steel axles	19.50 to 20.00
Malleable iron (agricultural)	11.50 to 12.00
Heavy steel	13.00 to 13.25
Country mixed steel	11.75 to 12.25

We quote, net tons, as follows:

No. 1 R. R. wrought	$13.00 to 13.50
No. 1 busheling	11.50 to 12.00
No. 1 machine cast	12.25 to 12.50
Axle turnings	9.50 to 10.00
Machine shop turnings	6.75 to 7.25
Grate bars	10.50 to 11.00
Pipes and flues	10.50 to 11.00
Tank iron	9.00 to 9.50
Sheet iron	5.00 to 5.50
Wrought drilling	6.75 to 7.25
Stove plate	10.50 to 11.00
Cast borings	5.75 to 6.25

Cincinnati.

Indiana and Central Ohio Concerns Figure in Inquiries.

Office of THE IRON TRADE REVIEW,
Room 11, Blymyer Bldg., Aug. 2.

Pig Iron.—The aggregate tonnage of sales during the week, as reported by the various selling agencies, has been exceedingly light, and market conditions are quiet and without feature of any kind. Buyers are still apathetic, and are making no determined efforts looking to future requirements. Orders ranging from carload lots to several hundred tons, as a rule, represent the bulk of the business transacted, the aggregate tonnage being of no special consequence. Prices apparently have not changed to any extent, and are about on the same level as they were last week. Alabama furnaces appear to be fairly well established on an $11.50 basis, with two or three producers in this district quoting nothing below $12. It looks, however, as though some of the Tennessee furnaces are unwilling to abide by this schedule, and have therefore decided to take some business at $11. This makes the range on southern foundry grades, for delivery during the remainder of the year, from $11 to $11.50, Birmingham. Some slight inquiry has developed for next year's requirements, but as a rule southern furnaces are said to show little inclination to quote beyond December. Conditions as regards northern iron are practically unchanged, $15 representing the maximum quotation, and $14.50 the minimum, Ironton basis. There is light demand, however, for these irons, and transactions

have been small during the week. One of the leading pipe interests is figuring on several thousand tons of the lower grades, and will probably close today. It is said, however, that these grades, especially No. 4, are very limited, and not immediately available in any considerable tonnage. Eastern territory is said to have developed some very acceptable business recently and there are several inquiries from the west that it is hoped will be productive of results this week. One of the large melters of central Ohio is inquiring for an indefinite tonnage, ranging from 2,000 to 3,500 tons of malleable, delivery running throughout the first half of next year. A concern in Indiana territory is figuring on a fair tonnage for 1911 requirements. A Michigan melter wants 500 tons of low phosphorus and 500 tons standard Bessemer for this year's requirements.

We quote, prices based on freight rates of $3.25, Birmingham, and $1.20, from Ironton, as follows:

Southern foundry No. 1	$14.75 to 15.25
Southern foundry No. 2	14.25 to 14.75
Southern foundry No. 3	13.75 to 14.25
Southern foundry No. 4	13.75 to 14.25
Southern No. 1 soft	14.75 to 15.25
Southern No. 2 soft	14.25 to 14.75
Southern gray forge	13.75 to 14.25
Northern No. 1 foundry	16.20 to 16.70
Northern No. 2 foundry	15.70 to 16.20
Northern No. 3 foundry	15.20 to 15.70
Jackson county 6 per cent silicon	18.70
Jackson county 8 per cent silicon	19.70
Jackson county 10 per cent silicon	20.70

Coke.—Foundry grades continue to be fairly active, and some contracting has resulted. There has not been much demand for furnace coke, the general impression being that the greater portion of the furnaces have closed for the year's requirements. Prices appear to be a little stiffer, and not so easily manipulated. We quote from the leading coke producing districts as follows:

	Prompt shipment.	Last half of year 1910.
Connellsville district:		
Foundry coke	$2.10 to 2.25	$2.25 to 2.50
Furnace coke	1.60 to 1.75	1.85 to 2.15
Wise county district:		
Foundry coke	2.00 to 2.15	2.15 to 2.25
Furnace coke	1.65 to 1.75	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	2.10 to 2.25	2.25 to 2.50
Furnace coke	1.75 to 1.90	1.90 to 2.10
New river:		
Foundry coke	2.40 to 3.00	2.50 to 3.25
Furnace coke	2.20 to 2.30	2.20 to 2.30

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16⅔ per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—Shapes and plates are quotable from 1.40c to 1.45c, and bars 1.45c, Pittsburg. The bar market is said to be well maintained and demand is fairly satisfactory. Local structural demand is exceedingly quiet and nothing of importance is pending.

Old Material.—There have been no developments during the past week that indicate any change for the better, and demand for the various grades of scrap is light and unimportant. Prices are said to be practically on the same basis as last report, yet show a tendency toward softening, and fluctuate according to circumstances. According to dealers they are about represented by the following schedule:

Old No. 1 R. R. wrought, net tons	$12.50 to 13.00
No. 1 machinery, net tons	12.00 to 12.50
No. 1 busheling, net tons	11.50 to 12.00
Old iron rails, gross tons	17.00 to 17.50
Old steel, rerolling, gross	16.00 to 16.50
Old short lengths, gross	15.00 to 15.50
Old iron axles, net tons	18.50 to 19.00
Heavy melting scrap, gross	13.00 to 13.50
Stove plate, net	9.00 to 9.50
Heavy turnings, net	8.50 to 9.00
Cast borings, net	6.00 to 6.50
Car wheels	14.00 to 14.50
Grate bars	9.50 to 10.00

Philadelphia.

Pig Iron Prices Still Recede—Finished Specifications Good.

Aug. 1.

Pig Iron.—Prices of pig iron are still settling in a market, the chief feature of which is its absence of consistent buying. There is evidence of a greater willingness on the part of some makers to do whatever the situation requires in the way of price concessions in order to get business and as little tonnage is being offered, conditions are somewhat ragged. Foundry iron is getting down generally upon the better grades, to $16 delivered for No. 2. Some Virginia interests are quite freely quoting $13.25 at the furnace, equivalent to $16 in this territory, and are expressing a willingness to entertain offers of $13 at the furnace. On some of the standard grades of Eastern Pennsylvania irons, sellers are showing no hesitancy in declaring that they will do $16 delivered for desirable lots. Nor is it held out that this would represent the minimum that the furnaces might do to secure especially attractive tonnages. Some sales of the better grades have already been made at $16 for No. 2X and this price has been materially cut on inferior brands, but there is also a moderate tonnage going in small lots around $16.25 delivered, or $15.50 at Eastern Pennsylvania furnace. Sales are light and are made up principally of small lot orders. One cast iron pipe interest in the week closed for an additional lot of 1,800 tons of northern lower grades for early shipment. Prices on pipe iron range from $14.75 to $15 delivered in this territory, the former representing southern iron and it is understood, off-analysis lots from nearby furnaces have sold at $14.50 delivered. The leading cast iron pipe maker is still in the market with inquiries which have been before the trade for several weeks. Mill forge is selling around $15 delivered, but one lot of 300 tons brought $15.15 delivered this week. Basic prices are largely nominal, as there has been no late buying of consequence, although a few small transactions with casting interests have been closed at $15.50 delivered. Offers of $15 delivered have been made by consumers, but have been rejected by makers. One buyer who has been seeking 5,000 to 6,000 tons has his inquiry still open. There is not much prospect of any great activity in basic soon as consumers are well covered and there are cases where shipments on contracts are being held up. Sales of standard low phosphorus are few. The General Electric Co. is reported as having closed on its inquiry for 1,000 tons for Everett, Mass., with Lebanon valley makers. This grade of low phosphorus has been selling around $17 at the furnace.

For prompt and third quarter shipment in Philadelphia territories, we quote as follows:

No. 1X foundry	$16.50 to 16.75
No. 2X foundry	16.00 to 16.25
No. 2 plain	15.75 to 16.00
Gray forge	15.00 to 15.25
Basic	15.50 to 15.75
Low phosphorus	22.50 to 23.00
No. 2 Birmingham	15.50 to 16.00
No. 2 Virginia	16.00 to 16.25

Finished Materials.—Makers of finished lines generally continue to report a good volume of specifications against contracts, but a limited amount of new business being taken. In this respect, the sustained operations of the mills in the near future is not a problem of great concern at this moment, as there is still two or three months' accumulation of unfilled orders upon the books. Nevertheless the dragging condition of new business is far from being satisfactory.

Prices on finished lines are fluctuating in the degree that various makers view the desirability of sizable orders as related to the condition of their rolling schedules. Competition for plain structurals is quite keen in this territory and less than 1.40c Pittsburg, or 1.55c Philadelphia, is being quoted in some cases. Structural trade is very slow as to new work in this district. The addition to the St. Charles Hotel, Atlantic City, 1,250 tons, and a general warehouse at Scranton, Pa., 1,000 tons, are being

revised. The steel for a building at Petersburg, Va., 200 tons, is up.

On plates, it is reported the price situation with the eastern mills is a trifle firmer than several weeks ago, and larger lots are going around 1.55c Philadelphia with higher levels for regular lots. Some boat business is still developing. In the railroad line, a contract of importance in the week was the award of 35 locomotives by the Illinois Central railroad to the Baldwin Locomotive Works. Steel bars are firm in this territory at 1.45c Pittsburg or 1.60c delivered. Open-hearth billets are selling in the east at about $27 mill or $27.50 Philadelphia. There is continued demand for bright tin plate and for sheet specialties.

We quote for delivery at Philadelphia and vicinity as follows:

Structural shapes, 1.50 to 1.55c; plates, 1.55c to 1.60c; steel bars, 1.60c to 1.65c; iron bars, 1.40c to 1.50c; 4 x 4 inch open-hearth rolling billets $27.50 to $28 delivered.

Old Material.—An absence of sizable sales continues to characterize the old material market. Transactions in which any tonnages figure are conspicuously wanting. There is considerable material in both the dealers' yards and in the hands of consumers, and the former are not offering their accumulations freely because of the low prices. Heavy steel is easier, sales having been made to some of the associated mills at $14 delivered, although one outside buyer has been paying $14.25 delivered. Some of the mills will only offer $13.50 delivered but this is a nominal price. Borings still show strength by reason of a short supply and are selling at $9.50 delivered and higher. Dealers are offering $9.25 delivered and in some cases will pay up to $9.40. Wrought and cast are quiet. There is some covering by selling interests against orders for steel and other grades taken at past, higher prices.

We quote gross tons, delivered in Eastern Pennsylvania consuming territory as follows:

Old steel rails (re-rolling)	$16.00 to 16.50
Heavy melting steel	14.00 to 14.25
Old car wheels	14.50 to 15.00
Old iron car axles	25.00 to 26.00
Old steel car axles	20.00 to 21.00
No. 1 railroad wrought	16.00 to 16.50
Wrought pipe	14.50 to 15.00
Cast borings	9.00 to 9.50
Wrought turnings	9.00 to 9.50
Heavy cast scrap	15.00 to 15.50
Railroad malleable	14.00 to 14.50
Stove plate	10.00 to 10.50

The International Harvester Co. has declared a regular quarterly dividend of 1¾ per cent on preferred stock, payable Sept. 1.

New York.

Further Concessions in Pig Iron—Heavy Foreign Ore Movement.

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., Aug. 2.

Iron Ore.—July was a month of unusually heavy receipts of trans-Atlantic ore at eastern ports, and fully 75,000 tons, excluding Newfoundland and Cuban shipments, were brought in. Of this total, about 30,000 tons was Swedish, 25,000 tons Spanish, 10,000 tons Algerian, 6,000 tons Russian, and there were other scattered lots. The heavy movement of Swedish ore was due to improved conditions in labor and in obtaining boats which had interfered with shipments in the recent past. The imports from Wabana, Newfoundland, in July were about 30,000 tons, and from Cuba, the leading shipper brought in 100,000 tons. Charter rates for trans-Atlantic ore traffic are easier, and now range from 9s to 9s 6d. Practically no sales of ore of any kind are now being made.

Pig Iron.—Further price concessions made by furnaces in their efforts to keep up their bookings, have contributed to the placing of a continued fair volume of foundry orders in New York territory. At least 10,000 tons was closed in the week by New Jersey, Brooklyn and Connecticut consumers. This business, however, continues in the nature of quiet trading, which has been worked up through the solicitation of selling organizations and not much of it is being done through open inquiry. Among the sales of the week were 1,000 tons each to Brooklyn, New Jersey, and Connecticut consumers, and a fair number of smaller lots. Buffalo furnaces, by reason of a further reduction of 25 cents a ton to $14.50, furnace, for No. 2X have had an added advantage through water freights to this territory and are getting most of the current business. The $14.50 price is equivalent to about $15.75 on dock at lower Hudson river points, and about $16 to Connecticut plants at water locations. The General Electric Co. has closed for 1,000 tons of low phosphorus iron for Everett, Mass., understood to have been of the Lebanon, Pa., grades, and is still negotiating for 2,500 tons of foundry iron for Lynn, Mass. An eastern Pennsylvania consumer has taken 3,000 tons of basic for equal shipments in August and September, but as special considerations attached to this sale, the price is not significant. The basic market is nominally $15.50, delivered, but this figure could probably be shaded. Some Virginia interests have reduced their prices to $13.25 for No. 2X, and will entertain offers of $13, but other sellers in that territory are not disposed to meet this price as yet. This range of quotations is equivalent to $15.90 to $16.05, at New York city docks, to which lighterage charges of 50 to 60 cents must be added. At this level, the iron is scarcely competitive at metropolitan or New England markets, and no large tonnages are being sold here. Good grades of eastern Pennsylvania irons can now be procured at $16, tidewater, for No. 2X. A cargo of 3,000 tons of English low phosphorus iron has been landed at Baltimore and will probably go to western consumers. An inquiry for 400 tons of low phosphorus from the Pittsburg district is current. We quote delivered at New York tide water for prompt third quarter shipment as follows:

Northern foundry No. 1	$16.25 to 16.75
No. 2X foundry	15.75 to 16.25
No. 2 plain	15.25 to 15.75
No. 2 Virginia	15.80 to 16.30
No. 2 southern foundry	15.50 to 16.00
Malleable	16.75 to 17.25
Gray forge	15.00 to 15.25

Ferro-Alloys. — Inquiry for ferro-manganese is light at present. Sales of 100 tons for prompt shipment at $39.50, seaboard, are noted. On last quarter, and first half business, some of the leading sellers are asking from $40.50 to $41, seaboard, but contract business is usually going under this level. French makers of 50 per cent ferro-silicon are not disposed to meet the low prices offered by Swedish and Norwegian interests. The current business in this alloy is small. We quote 80 per cent ferro-manganese at from $39 to $40, seaboard, covering all deliveries, and 50 per cent ferro-silicon at from $54 to $55, seaboard.

Cast Iron Pipe.—The Glamorgan Iron Works, Lynchburg, Va., has booked about 5,000 tons of cast iron pipe for Washington, D. C. The city of Boston will open bids Aug. 8, on 550 tons mostly 30-inch, and bids are going in this week on 400 tons, including specials for Brooklyn. The market is showing no greater life, and business in both public and private lettings is only fair. We quote 6-inch at from $24 to $25 f. o. b. New York, in carload lots.

Finished Material.—New business in finished lines is still lagging and conditions on this phase of the market show no improvement. Opposed to the limited offerings of new orders is a sustained activity of consumers in specifying against contracts. The mills are entering good tonnages for

rolling and their operations, as a consequence, are not declining. Softness in prices continues to mark the situation.

The total business in structural lettings during July failed to come up to expectations, but was not far from the 100,000-ton mark of which 30,000 tons went to the leading interest. The month of August is expected to be light in structural awards as, while there is a considerable tonnage under negotiation in the country, this is now being placed rather slowly, and this condition it is believed, will apply throughout the present month.

Specifications against structural contracts continue quite liberal.

Awards of the week were comparatively few. The Great Northern Railway placed 900 tons with the Minneapolis Steel & Machinery Co., for ore spouts at its docks, and the Chicago, Hamilton & Dayton, 350 tons of bridge work with the King Bridge Co., Cleveland. A freight house for the Chicago, Burlington & Quincy at Omaha, Neb., 500 tons, went to Paxton & Verling. The Denver & Rio Grande railroad contracted for 700 tons with the American Bridge Co. Other lettings included 500 tons for the Calumet & Hecla Copper Co., to the Warden-Allen Co.; 600 tons to the American Bridge Co. for a wharf shed at San Francisco; 500 tons to the Forest City Steel & Iron Co., Cleveland, for additions to the Republic Rubber Co., Youngstown, O., and 300 tons for the Orpheum theatre, Peoria, Ill., to the Joliet Bridge & Iron Works. Bids will be taken Aug. 15 on from 2,000 to 2,500 tons for a highway bridge to be built by the state across the Connecticut river, near Saybrook, Conn. The contract for the 10,000 tons for the New York Central terminal improvements, in this city, upon which bids have been taken, has not yet been placed.

Nut and bolt prices, which have been irregular for some time, appear to be even less firm and are being shaded about 5 points under the official schedule. Eastern bar iron mills are asking around 1.35c, at the mill, but are not getting much business at this level in this territory. Standard railroad spikes are being shaded and business has been placed recently at about 1.65c, Pittsburg.

We quote, New York delivery, as follows: Angles, 3 to 6 inches x ¼ inch and heavier, 1.51c to 1.61c; beams, 3 to 15 inches, 1.51c to 1.61c; tees, 3 x ¼ inch and heavier, 1.51c to 1.61c; plates, carload, tank 1.56c to 1.71c; boiler steel, 1.86c to 1.91c; marine boiler, 2.16c to 2.21c; bar iron, 1.35c to 1.45c; soft steel bars, 1.61c to 1.66c.

Old Material.—The limited volume of new business that is being transacted in old material is in small lots, and the market is without much animation. Some sales of heavy steel are being made to eastern consuming territory at from $14 to $14.25, delivered, and $14.50 has been paid in some recent cases. This grade is a shade weaker. The demand for clean borings is holding up and some small sales were put through at ruling prices during the week. Wrought pipe scrap is fairly strong and more active than most grades. Buyers generally, are adopting a hand-to-mouth policy in their purchases. We quote gross tons, prices New York interests will pay at tidewater, with the exception of cast scrap, which has a local demand, as follows:

Old steel rails (rerolling)	$14.50 to 15.00
Old car wheels	13.50 to 14.00
Old iron axles	21.50 to 22.00
Old steel shafting	16.50 to 17.00
Heavy melting steel	12.00 to 12.25
No. 1 R. R. wrought	14.25 to 14.50
Iron track scrap	13.00 to 13.50
Wrought pipe	12.50 to 13.00
Cast borings	6.75 to 7.00
Wrought turnings	7.00 to 7.25
Heavy cast scrap	13.50 to 14.00
Railroad malleable	13.00 to 13.50
Stove plate	9.00 to 9.50
Grate bars	10.50 to 11.00

St. Louis.

Very Little Pig Iron Business Pending—Prices Unchanged.

Aug. 1.

Pig Iron.—Midsummer dullness continues to characterize the pig iron business in the St. Louis territory, with few orders and not more than a total of 1,000 tons inquired for, and these are in scattering amounts of from 200 to 300 tons. The inquiry for 2,000 tons of Southern No. 2 reported to have been put out by a pulley manufacturer last week has either been withdrawn or temporarily held up. Probably not more than 1,000 tons were sold the latter half of last week. The $11 price for southern iron is still on the market, but it is doubtful whether any of the standard brands could be had for that figure. Local sales agents representing large southern interests are firm in their statements that their price for Southern No. 2 is $11.25 to $12. The $11 price has not been quoted for any delivery in 1911.

Our quotations, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$15.50 to 16.00
Southern No. 2	15.00 to 15.50
Southern No. 3	14.50 to 15.00
Southern No. 4	14.00 to 14.50

Coke.—The coke market is just about as dull as pig iron, with very few inquiries coming in, and sales almost restricted to the closing of yearly contracts. There seems to be an understanding between the manufacturers of coke to hold up the price, however, and the best-selected 72-hour Connellsville foundry grades are held as high as $2.40 to $2.50. Some 72-hour foundry coke can be had as low as $2.25. Connellsville 48-hour furnace coke is offered at $1.75 to $2, with Virginia 72-hour foundry holding at $2.25 to $2.50, and Virginia 48-hour furnace at $1.75 to $2. These prices are f. o. b. ovens in each instance. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields, when shipment is destined beyond St. Louis.

Shipments on coke and pig iron contracts are heavy, and collections are reported to be good.

Finished Material.—About the most important building deal that has materialized in St. Louis recently is the proposed 14-story steel-frame annex to the office building of the St. Louis *Times*. C. L. Gray, president of the C. L. Gray Construction Co. secured a 99-year lease on the lot fronting 42 feet 10 inches on Broadway, between Chestnut and Pine streets, adjoining the *Times* building, and on Nov. 1, will begin the erection of the building, giving the *Times* a frontage of 102 feet 10 inches on Broadway.

The following revised base prices are quoted, St. Louis, out of stock: Tank plates, ¼ inch and heavier, up to 72 inches wide, $1.90 to $2; from 72 inches to 96 inches wide, $2 to $2.10; sheets, blue annealed, No. 10, $2.30 to $2.40; bar iron, $1.75 to $1.85; soft steel bars, $1.90 to $2.

Old Material.—Actual trading in scrap iron is virtually at a stand-still in the St. Louis territory, will prices remaining nominally as follows:

Old car wheels	$15.50 to 16.00
Old iron rails	15.50 to 16.00
Rerolling rails (4 ft. and over)	15.00 to 15.50
Old steel rails (2 ft. and under)	12.50 to 13.00
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	24.50 to 25.00
Frogs, switches and guards	12.50 to 13.00
Heavy melting steel	12.00 to 12.25
Shoveling steel	12.00 to 12.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$12.75 to 13.25
No. 2 R. R. wrought	11.50 to 12.00
Arch bars and transoms	16.30 to 16.50
Knuckles, couplers and springs	12.00 to 12.50
Shafting	15.50 to 16.00
Iron car axles	19.00 to 20.00
Steel car axles	19.00 to 20.00
Locomotive tires	16.00 to 16.50
No. 1 country wrought	11.00 to 11.50
Pipes and flues	9.75 to 10.25
No. 1 cast 150 lbs. and less	13.00 to 13.50
No. 1 busheling	11.00 to 11.50

No. 2 busheling	8.00 to 8.50
No. 1 boiler cut	9.75 to 10.25
Boiler punchings	10.25 to 10.75
Cast and mixed borings	5.50 to 6.00
Machine shop turnings	7.75 to 8.25
Railroad malleable	10.50 to 11.00
Agricultural malleable	9.00 to 9.50
Stove plate and light cast scrap.	9.50 to 10.00
Angle splice bars, iron	15.00 to 15.50
Angle splice bars, steel	14.00 to 14.50

Buffalo.

Buyers Are Indifferent and Pig Iron Market is Quiet.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, Aug. 2.

The pig iron market is quiet, big consumers apparently not taking much interest in prices. Most of the orders are coming from small consumers, carload lots and smaller tonnage being more in demand than of late. Shipments are moving out well. Consumers are coming out a little more freely, however, on tonnage under contract. The central and eastern manufacturing centers of New York state show increased activity, but not to any great extent. Quotations, generally, are about 50c less on the leading grades. It is difficult, however, to quote definite prices while buyers show indifference. The prices quoted are therefore subject to some changes, depending on the tonnage needed and character of iron. We quote f. o. b. Buffalo, as follows:

No. 1X foundry	$15.00 to 15.50
No. 2X foundry	14.50 to 15.00
No. 2 plain	14.25 to 14.75
No. 3 foundry	14.00 to 14.50
Gray forge	14.00 to 14.50
Malleable	15.00 to 15.50
Basic	15.25 to 15.75
Charcoal	18.75 to 19.25

Old Material.—The condition of the scrap market shows no change of moment over the market as reported a week ago. We quote, gross tons, f. o. b. Buffalo, as follows:

Heavy melting steel	$13.00 to 13.25
No. 1 railroad wrought scrap	14.00 to 14.50
No. 1 railroad and machine cast scrap	12.75 to 13.25
Old steel axles	17.00 to 18.00
Iron axles	22.00 to 22.50
Car wheels	14.00 to 14.50
Railroad malleable scrap	13.75 to 14.00
Machine shop turnings	7.00 to 7.50
Cast iron borings	5.00 to 5.50
Low phosphorus steel scrap	17.50 to 18.00
Old iron rails	16.00 to 16.50
Tank iron	10.75 to 11.00
Sheet iron	7.50 to 8.00
Stove plate	11.50 to 12.00
Pipes and flues	11.00 to 11.50
Grate bars	10.50 to 11.00
Boiler plate	11.75 to 12.00

Birmingham.

Few Sales of Pig Iron and Prices Are Unchanged.

Birmingham, Ala., Aug. 1.

Pig Iron.—Trading in pig iron the week just closed was rather on the basis of "few sales and far between." Less than a thousand tons were sold, and inquiries were light. Eleven dollars and fifty cents per ton at the furnace represents the market so far as the majority of the furnace interests in the Birmingham district are concerned. Eleven dollars per ton at the furnace is still heard of, but the writer knows of a good-sized order having been turned down on that basis. Iron for prompt shipment is quoted at $11.50 per ton, as well as for delivery through the entire year; and with probably one or two exceptions this is the ruling price. There have been no more furnaces blown out since the last ones reported the last week in July, and the daily output of the furnaces now in blast about represents the movement of iron from the yards. Comparatively few orders are being held up, or specifications advanced any material length of time. Foundry iron production has been increased somewhat, not by reason of the blowing in of additional stacks, but by the change of one or two stacks from basic to foundry grades. One of the furnaces of the Tennessee company, as well as one of Woodward Iron Co.'s furnaces, has been changed in this manner. Under the circumstances, it is reasonable to suppose that production yet needs curtailment—and it is understood that such a policy will be pursued.

Cast Iron Pipe.—Conditions in the water pipe market look a shade better, and some important lettings are now under consideration. Quite a few of the middle-western cities, as well as southern towns, are contemplating municipality work on a large scale. Prices are unchanged, and are substantially as follows, per net ton, f. o. b. cars here: Four-inch, $23; 6, 8 and 10-inch, $21, with $1 a ton extra for gas pipe.

Old Material.—Dealers in scrap are manifesting some more interest in the way of buying and piling stock on their yards, provided an attractive price can be obtained. A resumption of activity is looked for with the opening up of fall trade in all lines of business. Prices are unchanged, and are only nominal in fact—which are as follows per gross ton, f. o. b. cars here:

Old iron rails	$14.00 to 14.50
Old steel axles	17.00 to 17.50
Old iron axles	18.00 to 18.50
No. 1 R. R. wrought	12.50 to 13.00
No. 2 R. R. wrought	11.00 to 11.50
Dealers' wrought	10.50 to 11.00
Old steel rails	11.00 to 11.50
No. 1 machinery	10.50 to 11.00
No. 1 steel	10.50 to 11.00
Old standard car wheels	13.00 to 13.50
Light castings, stove plate	8.50 to 9.00

A party of eastern and English capitalists are in the Birmingham district going over the properties of the Southern Iron & Steel Co., on a tour of inspection,—in which they are heavily interested.

Seattle.

Business Slightly Quieter—Future Bright.

Office of THE IRON TRADE REVIEW,
942 Henry Building, July 29.

Pig Iron.—The present week marks a slight let-up in the run of good business generally. This is not far-reaching, and only in scattered spots, being felt in plants where machine shops and foundries are run together. Foundries are all well stocked with iron and are buying only for daily consumption, as nearly all have a fair supply on hand. The outlook for August is good, and prospects for September business particularly encouraging. The Western Steel Corporation is beginning to offer some iron for local use. Indications point to considerable change in next quotations, which have been practically stationary for the past three months. Pig iron dealers are negotiating for charters for cargoes and ships in European ports for delivery next year. The demand for molders is good and comparatively few good men are out of employment. The Puget Sound Iron & Steel Co., of Tacoma, one of the largest manufacturers in Tacoma, has practically completed the machine shop and foundry buildings of the new plant. It is installing a converter and equipment for making steel castings. The Olympic Foundry, of Tacoma, is having a good demand for tile-making machinery, a new line of work that it is manufacturing.

We quote gross tons ex-ship Puget sound or Columbia river, domestic, f. o. b. Pacific coast terminal:

No. 1 English Jarrow, spot	$23.00 to 24.00
No. 1 Chinese, Hanyang spot	23.00 to 24.50
English Doncaster, spot	23.50
No. 1 Cleveland, spot	23.00 to 24.00
No. 1 Glengarnock, future	24.00 to 25.00

Finished Material.—For all classes of bars and sheets, there is a brisk demand, at the present time, though future orders are a little lower than usual. A reduction of $3 per ton, or 15c a keg, is a recent local development in wire nails. Nails are now quoted at $2.50 per keg against $2.65 formerly. The Western Steel Corporation is gradually getting into the northwest market as a producer of bars of all kinds and small sizes of sheets. Among the dealers generally, indications point to some rather important changes in quotations for finished material in the near future.

METAL MARKETS.

ST. LOUIS.

Aug. 1.

Lead and Zinc.—A strong demand for high-grade zinc ores in the Missouri-Kansas-Oklahoma district last week sent the price for choice lots to $44 a ton, assay base of $41 for 60 per cent grades. The demand for lower grades and those running high in iron was only moderate, ranging from $40 to $36, base. The average price paid for all lots was $37, compared with $38.33 of the week before. The approximate increase in the zinc surplus was 100 tons. Sales were 4,900 tons, compared with an estimated production of 5,000 tons.

The market for calamine was weak, choice lots bringing $26 a ton, and 40 per cent grades selling for $20 to $22 a ton. The average price paid for calamine was $23.20, compared with $23.68, the previous week.

Lead ore sold at $49 a ton, the same figure as the week before, with sales and production about equal. At the close of the week, the surplus was about 4,900 tons. The average price per ton paid during the week was $48.40, compared with $48.17 of the previous week.

NEW YORK.

Aug. 2.

Copper.—The prevailing sentiment of the copper metal trade is decidedly more cheerful than it was last week, and some good sales of the metal have been made in the local market. The changed conditions are due entirely to the persistent talk of an understanding among the leading producers of this and foreign countries to curtail the output of copper, and to the sold-out condition of independent producers. The latter has probably been the most patent factor in price making, as the market for such requirements as had to be met has been restricted to the United Metals Selling Co., and consumers have had to pay the asking price of that interest, which was 12.50c for electrolytic. It is understood that on the strength of the limited outside supplies the selling agency for the Amalgamated interests has recently advanced the asking price to 12.62½c for electrolytic. Lake and casting copper are nominal at 12.75c and 12.50c, respectively. The London market closed firm at £55 10s for spot, and £56 2s 6d for three months.

Tin.—The July statistics of pig tin were made public today. The principle fe[illegible] is an increase of 1,733 tons in the total of visible supplies, as compared with June 30, 1910. The visible, as of July 31, is 17,433 tons. This, however, is a decrease of 2,811 tons from the visible total at the corresponding date in 1909. There is still a scarcity of pig tin in the local market, and buyers have been forced to pay a big premium for spot throughout the week. The market closed very strong today. Spot tin sold at 33.75c. August and September were quoted at 33.15c to 33.30c, and Oct. at 33.15c to 33.40c. The London market closed firm; spot at £151 10s, and 3 months £151 15s. Arrivals since Aug. 1 are 1,103 tons and there are 2,495 tons afloat.

Lead.—A fair business has been done in pig lead and prices are very firm. Spot can be had at 4.55c in New York.

CHICAGO METAL MARKET.

Chicago, Aug. 2.

New Metals.—There is a trifle better feeling in the metal market, with something of an improvement in buying of copper futures, but this does not run into the entire three months covered by the option on this metal, nothing later than September being figured on at present. Both lake and casting copper are fractionally higher than at last report. Spelter is maintaining about the same position with only slight variation in price from day to day. Lead is holding at the trust prices with some independents quoting a shade higher. Tin is a little stronger, being quoted at 34¼c for prompt delivery or 33¾c for delivery in two weeks.

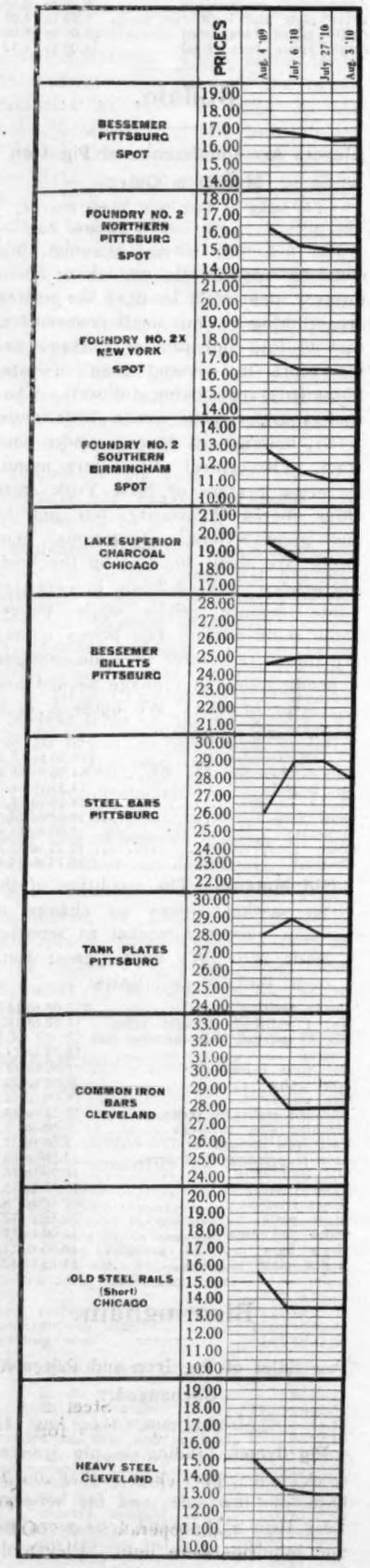
We quote as follows: Lake copper, carload lots, 13c; casting, 12¾c; smaller lots, ¼c to ⅜c higher. Spelter, car lots, 5.05c to 5.10c; lead, desilverized, 4.35c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $7.50 list, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 33¾c to 34¼c; Cookson's antimony, 10½c; other grades, 9¾c to 10¼c.

Old Metals.—It may almost be said of the scrap metal market at the present time that no such thing exists, and prices, which have been steadily falling off, are not firmly maintained at the lower levels.

We quote, dealers' selling prices, as follows:

Copper wire, 11c; heavy copper, 11c; light copper, 10¼c; heavy red brass, 10¼c; heavy yellow brass, 8c; light brass, 6¼; No. 1 red brass borings, 9c; No. 1 yellow brass borings, 6½c; brass clippings, 7½c; tea lead, 3.65c; lead scrap, 3.90c; zinc, 3.85c; tin pipe, 31c; tin foil, 28c; pewter, 22c; electrotype plates, free from wood, 4¼c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; linotype dross, 3¼c; prime slab zinc dross, $73 per ton.

PRICE CHART



BASIC SALE

And Inquiry for Larger Tonnage Pending—Late Pittsburg News.

Pittsburg, Aug. 3. (By wire.)

A sale of 2,000 tons of basic pig iron at $14.10, valley, to a consuming interest in this district for August and September delivery, is noted. An exchange deal involving between 1,200 and 1,500 tons of basic has been closed, but the iron did not go to a local interest.

The United Steel Co., Canton, O., is in the market for between 10,000 and 12,000 tons of basic pig iron for equal delivery over September, October, November and December. This is the largest inquiry for basic iron to come up in this market for several weeks. Inquiries for small lots of Bessemer pig iron for prompt delivery are coming out, but there has been no important trading.

Buying of wire rods is heavier, but at lower prices. A sale of Bessemer rods on a basis of $28, Pittsburg, with a deduction of $1 a ton as compared with quotations of last week, is noted, and it has now developed that this price has been made in two or three instances by local plants on desirable business.

The Pennsylvania Railroad Co. has asked for bids on 20,000 tons of scrap, including 6,000 tons of old rails, bids to be submitted not later than Aug. 9.

NATIONAL LEAD CO.'S ADDITION.

The National Lead Co., of Granite City, Ill., opposite St. Louis, has announced the letting of a contract for a $15,000 addition to its annealing ovens and pickling rooms, which will increase the size of the steel package plant. The new addition will be devoted to the manufacture of steel buckets for mercantile purposes. The new building will be three stories, of concrete and will be fireproof. When completed it will give employment to 250 additional men. The contract calls for the completion of the work by Sept. 30.

JONES & LAUGHLIN NOW SELLING WIRE PRODUCTS.

The Jones & Laughlin Steel Co. has opened its books for orders for wire products against its new wire mills at Aliquippa, Pa., which are now nearing completion. These mills are expected to begin operations in October and shipments on orders being taken are being promised from Nov. 1. The company will manufacture wire, wire nails and staples, plain and galvanized. The building of the Aliquippa mills puts an important new factor in the wire market, as the Jones & Laughlin Steel Co. has not included this line among its manufactured products.

MINING INSTITUTE PROGRAM IS ISSUED.

Secretary A. J. Yungbluth, of the Lake Superior Mining Institute, has just issued a circular letter giving the program of the meeting of the institute to begin Aug. 24, in Ironwood, Mich. After a day on the Gogebic range and a business session in the evening, the party will proceed to Chicago over the Chicago & Northwestern and will visit the shops of the company, the plant of the Sullivan Machinery Co., and the plant of Joseph T. Ryerson & Son, where lunch will be served. On Aug. 26, the plant of the Indiana Steel Co., at Gary, will be visited. Full preparation has been made for the entertainment of the members of the party and the afternoon of the day in Chicago will be devoted to a National league ball game.

WELSH TIN PLATE.

Swansea harbor trust returns for tin plate for the week ending July 16 show heavy stock reduction as follows:

	Week of July 16. Boxes.	Previous week. Boxes.	Corresponding week last year. Boxes.
Received	96,008	90,689	92,897
Shipped	144,322	116,184	99,629
Stocks	129,399	177,713	199,616

FOREIGN RAIL TRADE.

No orders seem to have been given out during the week for rails, but Dorman, Long & Co. have booked the 2,000 tons of fishplates for the East Indian railway. New inquiries include 11,000 tons for Queensland and 2,200 tons of 36's for the Sind Light railway, while the Midland railway is expected to be in the market soon for a good quantity.—The Ironmonger.

The new spike factory of the Lebanon Valley Iron & Steel Co., Lebanon, Pa., is expected to begin operating some time this week. Its equipment includes three automatic and two hand machines. The nut and bolt department will not be ready to operate until Sept. 1 because of construction delays.

LARGEST CONTRACT

For Monel Metal Castings Placed—Build New Plant.

What is said to be the largest contract for Monel metal castings that has ever been placed has been taken by the Bayonne Casting Co., Bayonne, N. J., for the two large battleships now building for the Argentine Republic in the yards of the Fore River Shipbuilding Co. and the New York Shipbuilding Co. The propeller wheels, 12 in all, of these ships will be cast in Monel metal. They will be in one piece about 15 feet 6 inches in diameter, and will weigh approximately 16,000 pounds each. The Bayonne Casting Co. has also recently taken a contract for four Monel metal propeller wheels to be built for the United States steamship Florida, which was recently launched at the Brooklyn navy yard. These wheels will be cast in one piece, will be 10 feet 6 inches in diameter and will weigh about 8,000 pounds each.

The Bayonne Casting Co. has just completed, at a cost of $75,000, a new plant, approximately 100 feet square, and which contains a sufficient furnace capacity to produce 40,000 pounds of Monel metal daily. The most modern machinery for foundry practice has been installed together with numerous special appliances required in the manufacture of the company's product. A 20-ton crane with a 5-ton auxiliary of the Morgan type has been installed, and also two 7½-ton jib cranes, which serve for the handling of material in about one-third of the entire shop. The foundry is operated by a Fairbanks-Morse gas engine and producer of about 150 horsepower capacity, and arrangements have been made for auxiliary service from outside sources. W. J. Edwards is president and LeRoy Edwards treasurer of the company.

ST. LOUIS SHIPMENTS.

Receipts and shipments of pig lead and spelter at St. Louis for the last two weeks were as follows:

	Zinc and spelter.	Pigs of lead.
Receipts:—		
For the week ending July 23..	69,920	56,440
For the week ending July 30..	69,230	54,450
Shipments:—		
For the week ending July 23..	67,630	37,360
For the week ending July 30..	81,710	34,890

The Leader Iron Works announces the consolidation of its Rochester, N. Y., office, the New York office and the eastern shipping department at Oswego, N. Y. All mail should be addressed to Leader Iron Works, Oswego, N. Y.

AWARDED CONTRACTS

To William Tod Co. for Gary Sheet Mill Equipment.

The William Tod Co., Youngstown, O., has been awarded a contract for the 16 sheet and four jobbing mills to be built at Gary, Ind., by the American Sheet & Tin Plate Co. A subcontract has been awarded to the Wheeling Mold & Foundry Co., Wheeling, W. Va., for all of the steel castings to be used in these mills. Additional sub-contracts will be awarded shortly for some of the machinery and other material.

On April 1, the American Sheet & Tin Plate Co. awarded contracts for its mill buildings at Gary to the American Bridge Co., and rapid progress is being made on the plate and jobbing mill buildings. The contract for the foundations was awarded to the Raymond Concrete Pile Co., of New York and Chicago. Eventually, the Gary plants will have a total of 140 sheet and tin mills, and will have a total production of upwards of 200,000 tons a year. The first 22-mill unit will contain two plate, four jobbing, and 16 sheet mills.

The William Tod Co. has also been awarded a contract by the Republic Iron & Steel Co. for the tables and transfers for the 40-inch blooming mill at Haselton, O.

EASTERN FURNACE SITUATION.

Reading, Pa., Aug. 2.

The Lackawanna Iron & Steel Co. on Sunday blew out its No. 1 stack at Cornwall, Pa., making all the blast furnaces in the Cornwall region now idle. The stack at North Cornwall has been idle for several years. No. 2 at Cornwall suspended operations some months ago. All the five furnaces in Lebanon excepting the old Lebanon Valley, or Meily stack, are now in operation.

ALAN WOOD WORKS RESUMES OPERATIONS.

The Alan Wood Iron & Steel Co. has resumed operations with five of its nine open-hearth furnaces and its steel works at Ivy Rock, Pa. The blooming mill was started on single turn, Aug. 1. The steel works and rolling mills of this company have been idle for about a month for the regular mid-summer shut-down, and the making of necessary repairs. Work upon the construction of the bridge connecting it with the blast furnaces of August Heckscher & Sons Co., recently purchased by it, and by which its steel works will be supplied with hot pig metal, is steadily progressing. The piers are now being erected and the superstructure assembled in the shop of the contractor. The bridge is expected to be in operation later in the year.

ONE PLANT RESUMES

And Another is Closed—New Sheet Card Not Yet Issued.

The Leechburg, Pa., plant of the American Sheet & Tin Plate Co., which had been idle for some months, resumed operation this morning and the Saltsburg, Pa., plant of the same company was closed down. The indications are that the latter plant will be idle for some time, as it is understood that the men formerly employed there have been advised to go to Gary, Ind., where there appears to be a shortage of workmen.

No action has been taken as yet regarding a new card on sheets, but practically all makers are now quoting $2 and $3 lower on black sheets and from $3 to $4 lower on galvanized sheets than a month or so ago.

Buying of tin plate for third quarter and last half delivery is comparatively light, as consumers generally are well covered for the rest of the year, and only a few plants are in a position to take on very much additional business for delivery prior to Jan. 1, 1911.

RIVERDALE MILL AGAIN RUNNING.

Chicago, Aug. 2.

The Riverdale Iron & Steel Co., located at Riverdale, Ill., a suburb a few miles south of Chicago, recently increased its capital stock to $150,000, and reorganized the company. A bond issue of $75,000 was also made. After being idle for several months, the plant was started on Friday last on bar iron, the capacity having been increased to 1,200 tons a month. The operations of the company are in charge of Francis C. Carey, vice president and general manager.

EUROPEAN VISIBLE COPPER.

London, Aug. 2.

The fortnightly copper statistics published today show a decrease in the visible supply of 3,500 tons during the last two weeks of July, making a total decrease for July of 4,800 tons in the European visible supply.

STRIKE QUESTION

Referred to Local Sheet Lodges for Final Action.

The question of discontinuing the strike against the mills of the American Sheet & Tin Plate Co., declared June 30, 1909, has been referred to the lodges of the Amalgamated Association of Iron, Steel and Tin Workers directly affected by the vote of the special convention of representatives of the mills on strike, held in Pittsburg on Monday of this week. The various locals have been instructed to vote on this question and to advise President P. J. McArdle of the action taken not later than Saturday. Upon the action of these lodges will depend further steps of the committee. If the vote is in favor of calling off the strike, this is expected to be done. It is not likely, however, that definite action will be taken before Aug. 10. A committee was sent to headquarters of the American Sheet & Tin Plate Co. yesterday to learn the standing of the men in the event of the strike being declared off. They returned with the report that the company would re-employ the men as fast as there were vacancies.

BRUTAL ASSAULT ON NON-UNION MEN.

At the plant of the Warner & Swasey Co., Cleveland, on Aug. 2, a gang of thugs suddenly swept down on a number of non-union workmen engaged in building an addition to the company's plant and began beating the men with clubs. The workmen, who numbered about 40, were taken so completely by surprise that they made but little resistance and after a brief fight they retreated, leaving the field to their brutal assailants, who then retired, as they had come, in automobiles. The worst injured among the workmen had his jaw broken with a billy and his ear lacerated. This man was also kicked after he had been knocked down. In all, 10 men were hurt, three of them seriously. They were all employes of the American Bridge Co. No explanation has been offered for the affair, other than that the unions have been at war with the American Bridge Co. for a long time. No arrests were made.

Walter Graham, Graham, Va., stamps as premature the report that he has leased the Graham stack from the Virginia Iron, Coal & Coke Co., and will make repairs preparatory to operating it.

FURTHER CURTAILMENT IN JULY

The total production of coke and anthracite pig iron in July showed a reduction of approximately 200,000 tons, compared with the output in June. The total production in July was 2,164,954 tons, compared with 2,288,279 tons in June, a net loss for July of 123,325 tons. The daily average production in July was 69,837 tons, compared with 76,276 tons in June, a loss for July of 6,439 tons. Since the month of July had one more working day than June, the actual curtailment in July of 123,325 tons added to 69,837 tons that would normally have been made on the additional working day in July, makes the July curtailment practically 200,000 tons over June.

AVERAGE DAILY PRODUCTION.

	1910.	1909.
January	83,871	57,683
February	86,747	60,088
March	83,508	58,793
April	82,590	57,687
May	76,607	60,218
June	76,276	64,334
July	69,837	67,375
August	.....	72,021
September	.....	79,186
October	.....	84,001
November	.....	84,425
December	.....	86,539

July this year showed a gain over July last year of 95,982 tons, and over July, 1908, of 955,998 tons. The daily average production in July this year was the smallest daily average since July, one year ago; in other words, it was the smallest daily average since the pig iron production of the country began last summer the strong upward swing, breaking all previous records and culminating in the tremendous output in December last of 2,682,702 tons. July's loss in total production of 123,325 tons compares with June's loss of 86,523 tons, and May's loss of 102,898 tons.

MONTHLY PRODUCTION.

	1910.	1909.	1908.
January	2,599,995	1,788,164	1,043,374
February	2,428,937	1,682,470	1,086 809
March	2 588,736	1,822,644	1,229,856
April	2,477,700	1,730,608	1,155,122
May	2,374,802	1,866,757	1,168,002
June	2,288,279	1,930,029	1,106,300
July	2,164,954	2,088,620	1,228,604
August	.....	2,232,642	1,366,019
September	.....	2,375.589	1,416 252
October	.....	2,604,037	1,573,824
November	.....	2.532,740	1,582,314
December	.....	2,682,702	1,723,664
Total	16,923,403	25,337,002	15,680,140

The production of merchant furnaces in July, 693,341 tons, showed a loss of 42,612 tons, compared with 735,953 tons in June. The non-merchant or steel plant furnaces showed a proportionately larger curtailment in July, 1,445,940 tons, compared with 1,518,619 tons in June, or a loss of 72,679 tons in July.

Two new stacks were lighted in July and thus added to the total blast furnace list of stacks. With the relighting of the furnace of the Western Steel Corporation at Irondale, the state of Washington re-entered the list of states producing pig iron. A new stack at Detroit was lighted by M. A. Hanna & Co. The total number of stacks in blast on the last day of July was 257, compared with a total of 271 in June, a loss of 14 stacks in July from the active list. A total of four merchant stacks was blown in during July, and ten were blown out, making a net loss of six merchant stacks from the active list in July. Four non-merchant or steel plant furnaces were blown in during July, and 12 were blown out, making a net loss of eight non-merchant stacks from the active list in July. In other words, eight stacks were relighted in July, while 22 were blown out.

The production of spiegel in July gained 793 tons, while the output of ferro in July showed a loss of 8,827 tons, as compared with the June output.

JULY BLAST FURNACE REPORT.

STATES.	NO. OF STACKS.	NO. IN BLAST ON LAST DAY OF MONTH. JULY.	JUNE.	ACTUAL TONNAGE MAKE. MERCHANT.	NON-MERCHANT.	TOTALS. JULY.	JUNE.
Pennsylvania	159	107	111	212,320	697,279	909,599	917,722
Ohio	69	47	50	152,099	308,808	460,907	464,798
Alabama	45	21	22	108,129	39,156	147,285	158,869
Virginia	24	11	11	40,037	———	40,037	39,781
New York	26	17	18	64,961	100,449	165,410	163,896
New Jersey	7	3	3	18,962	———	18,962	18,443
Illinois	26	17	20	23,499	166,796	190,295	250,253
Colorado	6	3	4				
Indiana	8	5	6	13,268	125,549	138,817	164,748
Maryland	4	4	4				
Wisconsin	6	2	3				
Kentucky	7	2	2				
West Virginia	4	1	1	37,500	7,903	45,403	55,176
Tennessee	18	10	11				
Washington	1	1	0				
Georgia	2	1	1				
Texas	3	0	0				
Minnesota	1	1	1	22,566	———	22,566	20,886
Michigan	3	3	2				
Missouri	1	1	1				
Spiegel—All states.						15,705	14,912
Ferro—All states.						9,968	18,795
Total	420	257	271	693,341	1,445,940	2,164,954	2,288,279

BLAST FURNACE NOTES.

The Sharpsville Furnace Co. blew out its Sharpsville, Pa., stack, July 11.

South Works stack No. 8 of the Illinois Steel Co. was blown out July 7.

The Marting Iron & Steel Co., Ironton, O., is planning to relight in August its Blanche furnace.

Clinton Iron & Steel Co. resumed blowing its Pittsburg stack, July 13. It had been banked since Apr. 2.

Gary stack No. 5 is completed and ready to be lighted, but the date for blowing is indefinite.

The Bethlehem Steel Co. blew out one of its South Bethlehem, Pa., stacks in July.

The Carnegie Steel Co. blew out one Isabella and one South Sharon stack in July.

The Goshen Iron Co. relighted its Goshen, Va., furnace July 24.

The Southern Iron & Steel Co. blew out its Alabama City, Ala., stack on July 4, having blown out its Chattanooga, Tenn., furnace a few days previously.

The furnace of the Hanging Rock Iron Co., Hanging Rock, O., was out of blast during July for repairs.

Alice stack of the Valley Mold & Foundry Co., Sharpsville, Pa., which recently came into its possession from the Youngstown Sheet & Tube Co., was blown out July 31.

PIG IRON STOCKS

In Middle West Changing Slowly—Corporation Puts Out Stacks.

Pig iron stocks with steel works and merchant furnaces in central western territory embracing Pittsburg, valleys, Ohio river and lake districts are more stationary at the present time, and during the six weeks up to the middle of July, there was a moderate reduction. Authoritative statements place the increase in some yards over that period at about 60,000 tons, and the reduction with other furnaces in the territory at about 80,000 tons, or a net decline of about 20,000 tons. Since that time, conditions have not been materially altered. The furnaces included in this calculation are 58 in all, in addition to the stacks of the United States Steel Corporation's subsidiaries. Of this 58, there were 43 in blast July 15.

The curtailment of pig iron capacity of the United States Steel Corporation the past week has been on a larger scale as the furnaces blown out included two Columbus, one Clairton and one Mingo. The various subsidiaries now have 39 furnaces idle, an increase of four compared with the preceding week, and 80 in blast. The active pig iron capacity of the Corporation at the present time is rated at 72½ per cent.

PREPARING TO CARE FOR BIG CONTRACTS.

Pittsburg, Aug 2.

Directors of the Wheeling Mold & Foundry Co., Wheeling, W. Va., held a meeting on July 28 and voted to increase the capital stock $95,000, from $405,000 to $500,000. This company recently received two large contracts. One of these was for all castings to be used in connection with the Panama canal lock work, aggregating $1,000,000 in value, and the other is for all the steel castings to be used in the 16 sheet and four jobbing mills to be built at Gary, Ind., by the American Sheet & Tin Plate Co.

REPORT IS DENIED.

A report that Chas. M. Schwab and associates are planning large improvements to the plant of the Harlan & Hollinsworth Corporation, at Wilmington, Del., for the construction of all-steel railroad cars on a large scale is officially denied. The company is now a builder of all-steel passenger cars and has recently made some improvements to this department, but no further improvements are now contemplated.

PERSONAL.

A. C. Dinkey, president of the Carnegie Steel Co., sailed last week for Europe on the Friedrich der Grosse.

T. Evans, for many years purchasing agent of the Cananea Copper Co., has been appointed local manager of the Mine & Smelter Supply Co.'s office at Denver.

T. I. Crane, of Pilling & Crane, Philadelphia, has sailed for a trip abroad, most of which will be spent in continental Europe.

Frank Moore, president of the Pittsburg Malleable Iron Co., Pittsburg, was cut about the head and face when a taxicab got beyond control of the driver and ran into the curb at Thirty-third street and Grant boulevard, Pittsburg, on July 26.

Mark Steese, who for two years has been superintendent of Mary furnace of the Ohio Iron & Steel Co., presented his resignation, effective Aug. 1. He has been succeeded by William Holzworth, formerly superintendent of the Hannah furnace of the Republic Iron & Steel Co., but later engaged in assisting in the erection of Worth Bros. Co.'s furnaces at Coatesville, Pa.

OBITUARY.

William H. Collins, founder of the Collins Plow Works, at Quincy, Ill., formerly member of the City Legislature, died at his home in that city July 30, aged 75 years.

O. S. Jordan, president of the Jordan Railway Equipment Co., died at his home in Chicago, Aug. 1, aged 57 years.

Ira H. Miller, assistant manager of sales for the Bethlehem Steel Co., died July 21, at Bethlehem, Pa., aged 37. He was formerly in the sales department of the Crucible Steel Co., at Pittsburg.

George W. Hutton, formerly vice president of the Magnesia Products Co., and latterly connected with the McGuire-Cummings Mfg. Co., railway supplies, died at his residence in Chicago, July 27, aged 62.

Phineas F. King, inventor of the screw door safe and the calendar time lock for safes, died, July 26, at his home in Cleveland, aged 75. He was born in Wareham, Mass., served through the civil war and, after perfecting his safe inventions, became connected with the Boadrey Tool Co., in Boston, and later with the Mosler Safe Co., in Chicago.

The death of Nathan G. Boggs, aged 55, president of the Brown & Boggs Co., Hamilton, Ont., manufacturers of tinsmiths' tools and machinery, took place at that city, July 22. Mr. Boggs began his business career with the firm of S. J. Moore & Co., and 23 years ago, in partnership with J. M. Brown, acquired the business which gradually developed into an important industry. He had been in ill-health for several years preceding his death.

The death of Anthony Copp, a pioneer in the foundry business of Hamilton, Ont., took place on July 28 at the age of 83 years. Mr. Copp was born in Devonshire, England, and went to Canada when 16 years old. About 50 years since, in partnership with his late brother, W. J. Copp, he established the firm of Copp Bros., which became a flourishing foundry enterprise. He retired from business some 20 years since.

William J. Elder, president of the Standard Metal Co., Indianapolis, died July 23, of heart failure, at his home in that city. He was born in Greencastle, Ind., July 28, 1862. He was widely known in the western iron trade, having for 20 years been connected with the firm of Somer & Sullivan, five years ago leaving to found the company of which he was executive head at the time of his death.

William Van Vleck Lidgerwood died, July 27, at his home in London, Eng., at the age of 78 years. Death was due to heart disease. Mr. Lidgerwood was the London representative of the Lidgerwood Mfg. Co., Newark, N. J., manufacturer of hoisting equipment. Upon the death of Judge Stephen Vail, Mr. Lidgerwood and his brother, the late John H. Lidgerwood, took charge of the Speedwell Iron Works, at Morristown, N. J. The works were finally dismantled and the machinery shipped to Scotland. Later Mr. Lidgerwood located in London.

Boudinot Seeley, pioneer in the development of the charcoal iron industry of southern Ohio, died, July 23, at Portland, Ore., aged 88. Born on an Ohio farm in 1822, he located at Buckhorn furnace in 1843 and became one of the early pig iron makers of the Ohio valley, retiring from active business in 1869, after having attained much success. He removed to Oregon in 1893, joining his son, L. B. Seeley, E. W. Crichton and Capt. W. B. Scott, all former Ohio iron men, who were associated in an iron plant at Portland.

THE PRODUCTION OF ALLOYS OF NICKEL AND COBALT WITH CROMIUM[1]

Description of Interesting Experiments Resulting in Discovery of an Alloy Possessing Valuable Properties.

By Elwood Haynes.[2]

The metals nickel and cobalt have always possessed a peculiar interest for the chemist. Like nearly all of the more recently discovered metals, their compounds were known before the metals themselves were discovered. Indeed, it has been known for centuries that certain substances were capable of giving a blue color to glass, and there is but little doubt that this peculiar power was due to some crude compound of cobalt.

About two centuries ago, the ores of cobalt and nickel were encountered in the mining of copper. It was at first supposed that they were ores of the latter metal, but the miners, after vainly striving to smelt the ore, and failing to obtain any copper from it, designated it as "Kupfenick," and from this expression, the word "nickel" originated.

Attempts were also made to smelt the ores of cobalt, but, as no useful metal resulted, they decided that the goblin, or "Kobold," supposed to inhabit the mines, had placed a ban upon the ore, and thus rendered it incapable of producing valuable metal. From this designation by the German miners, the name "cobalt" was derived.

It was not until 1751, that Cronsted published the results of an investigation which he had made upon an ore obtained from the mines of Helsingland. This ore yielded a brittle metal, and as it occurred most abundantly in "kupfernickel," he suggested for it the name "nickel".

A few years later, in 1776, it was discovered that nickel was evidently one of the constituents of a Chinese alloy, known as "packfong."

Commercial Use of Nickel.

The use of nickel in German silver began about the year 1823. It was not, however, until 1857 that Messrs. Deville and Debrary, the celebrated French chemists and metallurgists, prepared pure nickel by heating its oxalite in a lime crucible. From the pure metal thus obtained, wires were made which showed a tensile strength superior to that of wrought iron. The wires also showed considerable toughness and, when polished, presented a bright, silvery appearance and retained their luster for an indefinite period under all ordinary atmospheric conditions.

A few years later, the art of electroplating was discovered and has since received a very wide application. Tons of the double sulphate of nickel and ammonia are used for this purpose every year.

Besides this latter application of the metal, it is now used in large quantities for the manufacture of nickel steel, which has become a common material for the making of naval guns, projectiles, armor plate and high class automobiles.

The First Experiments.

The history of cobalt is similar to that of nickel, excepting that the *compounds* of cobalt were used in the arts instead of the metal itself. In fact, but little was known of the metal until 1857, when Deville produced the pure metal in practically the same manner that nickel was prepared. It was found that cobalt was even stronger than nickel, possessing a tensile strength of about 65,000 pounds per square inch. Indeed, up to that time it was the strongest pure metal yet discovered, and it still holds this position, with the possible exception of tantalum.

About the year 1895, I made a number of tentative experiments relating to the production of alloys of nickel with iron, chromium and other metals. The fusions were made in small graphite crucibles, which were heated in a blast furnace of the Fletcher type, operated by natural gas at a pressure of 40 pounds or more per square inch. With a suitably arranged furnace of this character, temperatures ranging up to the fusing point of the most refractory Missouri fire clay were readily obtained. I succeeded in obtaining by this means alloys of nickel and chromium, which contained, however, a considerable amount of carbon and silicon. A small quantity of aluminum was sometimes added to the alloy in order to improve its quality. By this means I obtained an alloy of chromium, nickel and aluminum which was hard and brittle, but possessed fairly good color and luster. From this alloy a knife blade was formed, which showed fair cutting qualities and considerable resistance to atmospheric conditions. It was readily soluble in nitric acid, and, after long exposure to the atmosphere of a chemical laboratory it became tarnished, showing a greenish coating on its surface.

Later I attempted to produce alloys of nickel with chromium and titanium by means of an electric furnace, made from blocks of quick lime. This proved unsatisfactory, but I continued experimenting with the gas furnace and finally succeeded in producing an alloy of nickel and chromium entirely free from carbon by heating the pure mixed oxides of the two metals with powdered aluminum in a crucible lined with pure oxide of aluminum. The reaction was so violent that most of the metal was thrown from the crucible. A few small pellets were saved and these showed great malleability, flattening readily under the hammer without cracking. The alloy possessed a fine color and, when polished, exhibited a beautiful luster. Larger pellets were soon obtained and it was found that when the chromium content much exceeded 10 per cent the alloy showed remarkable resistance to chemical reagents, particularly to nitric acid.

At about the same time, I reduced a mixture of sesquioxides of cobalt and chromium, with powdered aluminum, and thus obtained minute pellets of an alloy of cobalt and chromium. The little particles this produced were not much larger than pinheads. They were found to be remarkably hard and could not be scratched by a file. A few of these were ground off on one side by means of carborundum and showed a brilliant luster. It occurred to me that the metal might become serviceable for cutting instruments.

A Non-Corrosive Metal.

A short time after the above experiments were made, I was called actively into the automobile business and thus compelled to abandon further experiments along this line for some time.

In 1905, I repeated some of the former experiments, with a view to utilizing the alloys of cobalt and nickel with chromium for ignition points in connection with gas engines. I was soon able to produce both the alloys of nickel and cobalt in considerable quantity. I ascertained that the nickel-chromium alloy could be worked cold, while the cobalt-chromium alloy must be

[1]Paper read before the American Chemical Association, San Francisco meeting, July 16, 1910.

[2]President, Haynes Automobile Co., Kokomo, Ind.

worked hot in order to obtain any degree of satisfaction.

The first pellets of the cobalt-chromium alloy, weighing from 15 to 30 grams, were obtained by heating mixtures of aluminum with the oxides of cobalt and chromium in crucibles lined with oxide of aluminum. Some of these pellets were heated to redness and flattened out under the hammer, and while this could be done without cracking the alloy, the metal was found to be very hard, even at a red heat.

I soon found that it was impracticable to reduce the alloy in this manner in large quantities. I accordingly purchased a considerable amount of pure cobalt and pure chromium and had a mixture of nearly equal parts of these metals fused in an electric furnace, the metals being placed in a carbon crucible lined with pure magnesia. The alloy was cast into a small bar, about ¼ inch square and 5 or 6 inches long. This alloy exhibited most of the characteristics of that obtained by reduction with aluminum, but it could not be drawn to any extent under the hammer without cracking. Whether this was due to the high percentage of chromium or to slight impurities in the metals employed, I am as yet unable to say.

In order to determine what the effect of alloying the cobalt with smaller percentages of chromium would be, I again had recourse to the gas furnace and succeeded in melting a mixture containing 75 per cent cobalt and 25 per cent chromium in a crucible, made of a very refractory material, which I compounded for the purpose. Much to my satisfaction, I succeeded in melting this alloy to a perfect fluid and poured it into an ingot mold, which gave me a bar of metal about ½ inch square and 5 or 6 inches in length. This metal proved to be very sonorous and elastic and, if some care were used, it could be hammered out into a rough strip.

After a considerable amount of experimenting with various purifying agents, I finally succeeded in producing a very tough and malleable alloy, which could be hammered into the thinnest sheet at a bright red heat without showing any signs of cracking. A razor blade was made from a bar of the alloy, and while it did not prove equal to the best steel for this purpose, it has been used hundreds of times for shaving purposes and, after a year and a half, shows practically no signs of wear, though, of course, it has been necessary to strop it frequently in order to keep it in good condition. This bar was made about two years ago and I am sure that I have since produced metal that would be much more satisfactory for the purpose.

A test of the tensile strength and elastic limit of this material showed an elastic limit of 79,000 pounds, tensile strength 96,000 pounds and elongation 3 per cent. It will be seen from the above that both the elastic limit and tensile strength of this material are superior to those of untreated steel, resembling more nearly those of good nickel steel. The elongation is quite low, but this is to be expected, on account of the great hardness of the alloy, which is equal to that of mild tempered tool steel. A test was also made of the modulus of elasticity of this material, which was found to be about equal to that of steel. This is a very significant fact, since heretofore it has not been possible, so far as I am aware, to form an alloy of non-ferrous metals which would show a modulus of elasticity comparable to that of iron and steel. And it is lack of this valuable property in various non-ferrous mixtures which renders them inferior to iron for many important purposes.

A pocket knife blade and several table knife blades were made from this material and were found to be very satisfactory in every respect. One of these table knife blades has now been in use for more than two years in the kitchen, where it was used for all sorts of purposes, such as cutting bread, turning griddle cakes, peeling and paring vegetables and for various other purposes, such as are known only to the culinary art. After all this use and abuse, the knife shows not the slightest trace of tarnish and has held its luster so well that when exposed to the sun, it shows a reflection which dazzles the eyes.

By mixing the alloy with small quantities of other substances, its properties may be modified to a remarkable degree. By this means, I have obtained alloys or combinations which, while very brittle, would readily scratch quartz crystal.

By reducing the quantity of chromium to some extent and adding certain other materials, alloys, which are practically

FIG. 1—SHAVING CUT FROM STEEL BAR AT A SPEED OF 200 FEET PER MINUTE BY COBALT-CHROMIUM TOOL, SHOWN ABOVE. UNDER THE SAME CONDITIONS HIGH SPEED STEEL TOOLS FAILED ALMOST INSTANTLY.

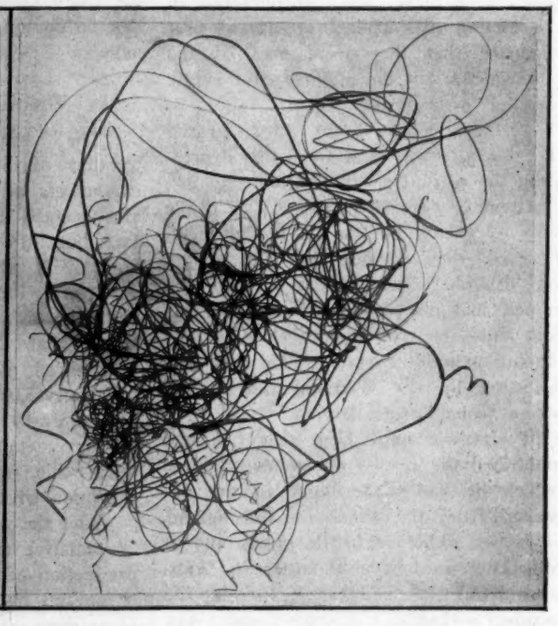


FIG. 2—SHAVINGS CUT FROM STEEL BAR WITH COBALT-CHROMIUM TOOL WITHOUT REGRINDING.

proof against nitric acid, can readily be obtained, which are sufficiently soft and malleable to be worked cold, having a hardness not much greater than that of mild, untempered steel.

Between these two extremes, a great variety of combinations can be made, which are suitable for use for various purposes. For example, I have produced an alloy of sufficient hardness that when it is formed into a small bar, say ½ inch wide, ¼ inch thick and 3 inches long, and one of the ends shaped for a cold chisel, a 20-penny nail can be cut in two without marring the edge of the chisel in the slightest degree. I have formed another alloy into a small lathe tool about ¼ inch square and 3 inches long, which showed cutting qualities comparable to high-speed tool steel. In fact, in some respects, especially under high speed and light cuts, it has stood the test for a long time where high-speed steel failed almost instantly, on account of the intense heat generated. I wish it distinctly understood, however, that I do not recommend this material, as yet, for lathe tools, though it would have a high value for this purpose if it were not obliged to compete with alloy steels.

An alloy of 75 per cent cobalt and 25 per cent chromium, to which small quantities of other metals are added, is not only sufficiently hard for good edge tools, but is quite tough and can be bent much beyond its elastic limit without cracking; resembling in this respect the alloy steels, but, generally speaking, it is much harder. A bar of the alloy, ¼ inch square, can be bent cold at right angles without showing any signs of cracking.

Chemical Properties.

When the mixture of cobalt and chromium is heated to whiteness in a crucible, the cobalt first commences to fuse and immediately begins to combine with the chromium, and if the metals are mixed in the proportion of about three parts, by weight, of cobalt to one part of chromium a eutectic is formed which seems to possess a lower melting point than either cobalt or chromium. This is all the more remarkable because the melting point of pure, carbonless chromium is exceedingly high.

The color of the alloy lies between that of steel and silver and is specially pleasing in bright light. The alloy is also readily polished, but requires special treatment in order to develop its highest luster.

The most remarkable property of this combination, however, is its resistance to corrosion. It is equaled in this respect only by gold and the metals of the platinum group. It is attacked slowly by dilute hydrochloric acid and somewhat vigorously by the strong acid, especially when heated. Momentary exposure, however, to either dilute or strong hydrochloric acid has practically no effect upon the metal. Both strong and dilute sulphuric acid attack it very slowly when cold and not very rapidly even when heated. Nitric acid is totally without action upon it and a polished piece of the alloy may be boiled in it for hours without affecting the luster of the metal in the slightest degree.

Solutions of the caustic alkalies are also totally without action upon it, even when boiled for hours. The alloy is likewise proof against all atmospheric influences, whether the air be moist or dry, and retains its brilliant luster for months or even years, under severest conditions. Even sulphuretted hydrogen, when present in the atmosphere in large quantity, is totally without influence upon it.

Its resistance to culinary operations has already been mentioned.

When the metal is heated in contact with the atmosphere, it retains its color up to a temperature approaching a dull red, or about 500 degrees Cent., when it shows a faint straw color, which deepens, as the temperature rises, passing through bronze-yellow, purple and blue, and finally terminates in blue-black.

The alloy shows no scales, even when heated to bright orange, and the film of oxide does not seem to increase in thickness after prolonged heating.

It can readily be melted in an open crucible in a gas furnace, with practically no oxidation, so long as a slightly reducing flame is maintained. This is all the more remarkable on account of its high melting point, which seems to be about 1,650 degrees Cent. for the 25 per cent alloy. Indeed, the metal has been melted in this manner with a loss of less than one-half of 1 per cent.

Uses.

The uses for any substance may be limited in several particulars; first, by the limitations of its fitness, second, by the possibility of producing it in proper form, and third, by its cost. This material is particularly suitable for all kinds of small cutting instruments, since it takes an edge comparable to that of tempered steel. It is especially adaptable to the manufacture of pocket knives, on account of the beauty of its color and the brilliancy of its luster, both of which remain permanent under all circumstances, thus giving the blades a particularly attractive appearance. Knives of this description may be used for cutting fruit without danger of marring their luster in the slightest degree.

Alloys in certain proportions will also doubtless find a wide use for surgical instruments, since they resist perfectly all sterilizing solutions.

The alloy is perhaps better adapted for table cutlery than anything that has ever yet been produced. We all know too well that a silver plated knife, for example, is ill adapted for any service requiring a sharp edge, and it cannot be sharpened without destroying the plating. Steel knives, on the other hand, while they cut well, require endless labor to keep them in presentable condition, and, at best, they are unsightly in appearance.

The alloy is also of considerable interest to the chemist and physicist. It is admirably adapted for the manufacture of fine weights for balances, scrapers, spatulas and other laboratory appliances. To the physicist, it furnishes a material at once hard, lustrous and untarnishable, and hence well adapted for the manufacture of fine weights, measuring instruments and various small tools.

The alloy is also particularly well adapted for the manufacture of standard weights and measures, such as the gram, kilogram, meter, etc., and it is difficult to see in what respect it is inferior for this purpose to the expensive platinum-iridium alloys now in use.

The alloy could readily be made into laboratory vessels, cooking utensils, spoons, forks, etc., and is limited in this respect only by its cost.

Cost.

Regarding the cost of production and manufacture, I am not at present prepared to make definite statements. I have succeeded, however, not only in obtaining the raw materials at lower prices, but have also reduced the cost of production to a considerable degree so that it is now possible to produce the alloys with as much dispatch and precision as is possible in the production of common alloys.

BANCA TIN SALE.

The sale of Banca tin in Rotterdam, July 28, was at an average price of 89¾ florins, equivalent to about 32.80c, c. i. f. New York. This price compares with 33c May 25, 33.85c March 31, and 32.40c Jan. 26. About 2,200 tons were disposed of at the last sale.

OPERATING EXPERIENCES WITH A BLAST FURNACE GAS POWER PLANT

The First Authentic and Comprehensive Report of Performance Under Commercial Conditions.

By Heinrich J. Freyn.

(Concluded from The Iron Trade Review, *July 28.)*

Fig. 37 shows the monthly averages of the kilowatt output of the power station, of the heat consumption in B. T. U. per kilowatt hour and per brake horsepower hour, based on a generator efficiency of 96.2 per cent at full load, and of the thermal efficiency. The diagram also shows the total operating time of each engine since starting.

The thermal efficiency of the plant was very uniform from the middle of 1908 until about May, 1909, averaging 23.22 per cent. The drop which began in May and reached a low value in October, was due to certain troubles encountered with gas cylinders and piston rings, etc. These could not be remedied at that time, as on account of the ever-increasing demand of electric power and the lack of a spare unit, it was impossible to shut the gas engines down sufficiently long for a thorough overhauling and for necessary repairs. Doubtless with an additional spare engine the load factor would have been lower than the average for 1909, which reached 72 per cent, but the thermal efficiency would have remained constant—or nearly so—since the necessary repairs, adjustments and changes could have been made on these engines in time, without reduction in the total kilowatt output of the power plant. In spite of this reduced efficiency in the second half of 1909, the average figure obtained for the whole year,—not as the result of one or of several individual tests, but as the fair average of daily observations, proper corrections having been made for the inexact readings caused by dust in the venturi meter in September and October—was 20.8 per cent, with a maximum monthly average of 23.77 per cent in March, and a minimum of 17.8 per cent in October. The highest daily average efficiency in 1909 was 25.7 per cent on March 11.

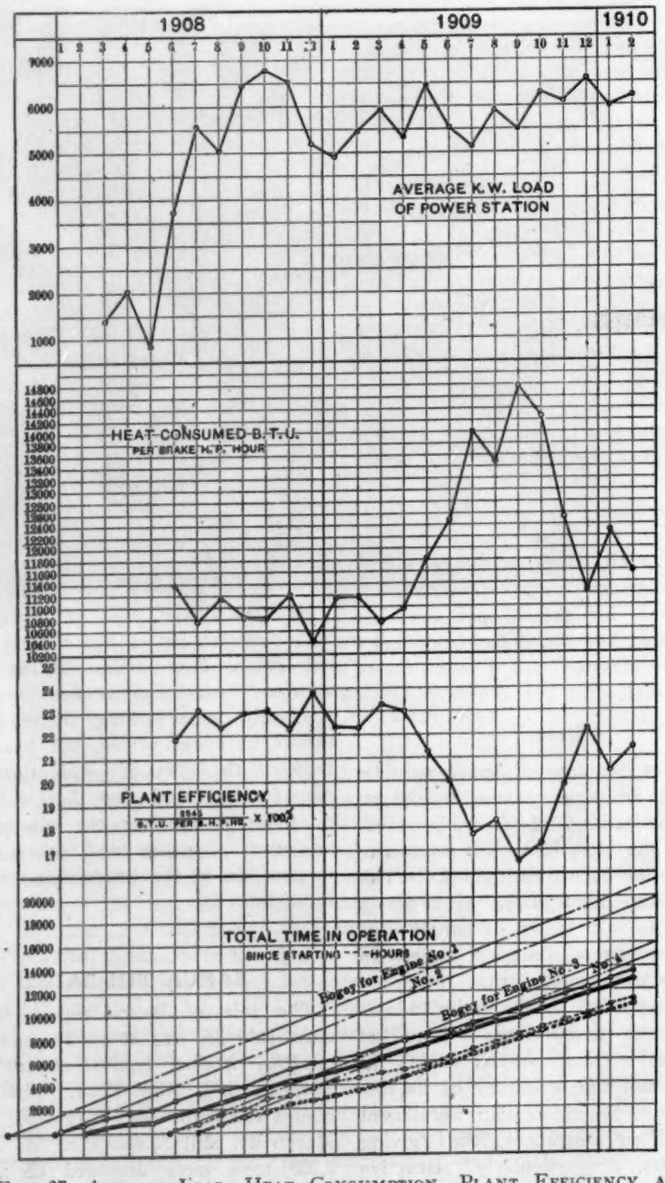


Fig. 37—Average Load, Heat Consumption, Plant Efficiency and Operating Time; Monthly Averages.

During the year 1909, the engines, while in operation, ran at nearly full-load capacity, the average for the four engines ranging from 93.60 to 99.63 per cent.

The values of the total kilowatt output of the gas power plant for each month since regular operation was begun, are plotted in Fig. 38, showing that the maximum output for any month occurred in October, 1908, when 5,000,000 kilowatt hours was produced. The output of the gas power plant for the year 1909 was 50,494,100 kilowatt hours against 43,953,640 kilowatt hours produced by the steam-driven generators. The load factor for 1909 of the gas power plant was 72 per cent, against 47 per cent for the steam power stations, which have a rated capacity of 10,900 kilowatts. The total output of electric power generated in 1909 was 94,447,740 kilowatt hours, 53.5 per cent of which was produced by the gas power plant.

Description of Methods and Instruments Used in Obtaining Data

Temperatures. The temperature of the gas entering the cleaning plant is measured and automatically recorded by a Bristol pyrometer. Readings

of the gas temperature are taken by the operators every three hours, after the dry cleaning plant, after the wet scrubbers, and before and after the Theisen washers, the last temperature being also recorded by a Bristol recording thermometer. Temperature readings are further taken at the inlet and outlet of each gas holder. All thermometers have the Fahrenheit scale and are permanently installed in the pipe lines. The water temperatures are read every three hours at the pump suction, after each wet scrubber and after the Theisen washers. For the purpose of comparison the temperature of the atmosphere near the washer building is simultaneously recorded. Portable thermometers with the Fahrenheit scale are used for measuring water temperatures.

Pressures. Readings are taken by the operators every three hours, by means of ordinary U-tubes, of the gas pressure in inches of water at the following places: At the point where the gas enters the cleaning plant, between the wet scrubbers, and before and after the Theisen washers. In addition, the pressure of the raw gas at the main water seal, and of the fine gas after the Theisen washers, is continuously recorded by Bristol pressure gages. For convenience of observation all instruments indicating and recording gas and water pressures, temperatures and venturi meter pressure differences, are arranged on a gage board (Fig. 39) installed in the Theisen washer building. On the same gage-board the telephone gongs and the optical indicators showing the position of the two gas-holder bells are mounted. By a simple system of contacts each gas-holder bell, while descending, closes five different electric circuits, and causes incandescent lights to burn corresponding to its different positions. Thus a white light burns when the holder is in its top position; a green light appears when the holder bell has descended 7 feet; one red light, indicating danger, corresponds to a 14-foot immersion of the holder bell, and two, and at last three, red lamps show that the bell has fallen 21 feet and 28 feet respectively, and is nearing its bottom position. When the three red lights burn the gas holder is practically empty. Similar optical indicators are installed in the electric power and gas-blowing engine houses, so that the engine operators can independently observe the position of the gas holders at any time.

Power consumption. As all Theisen washer and pump motors are operated by 440-volts alternating current reduced in special transformers from 2,200 volt, 25-cycle, three-phase current generated in the electric station, an integrating kilowatt meter was installed at the main switchboard to measure the combined power consumed by all gas cleaning plant motors. Unfortunately, the motor-driven air compressors for starting the gas engines are on the same line, so that the power for two 50-horsepower motors is included in the meter readings; but since each air compressor is

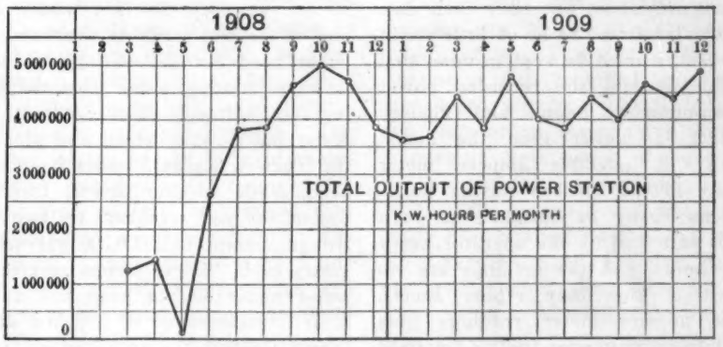


FIG. 38—TOTAL OUTPUT OF GAS POWER PLANTS; MONTHLY AVERAGES.

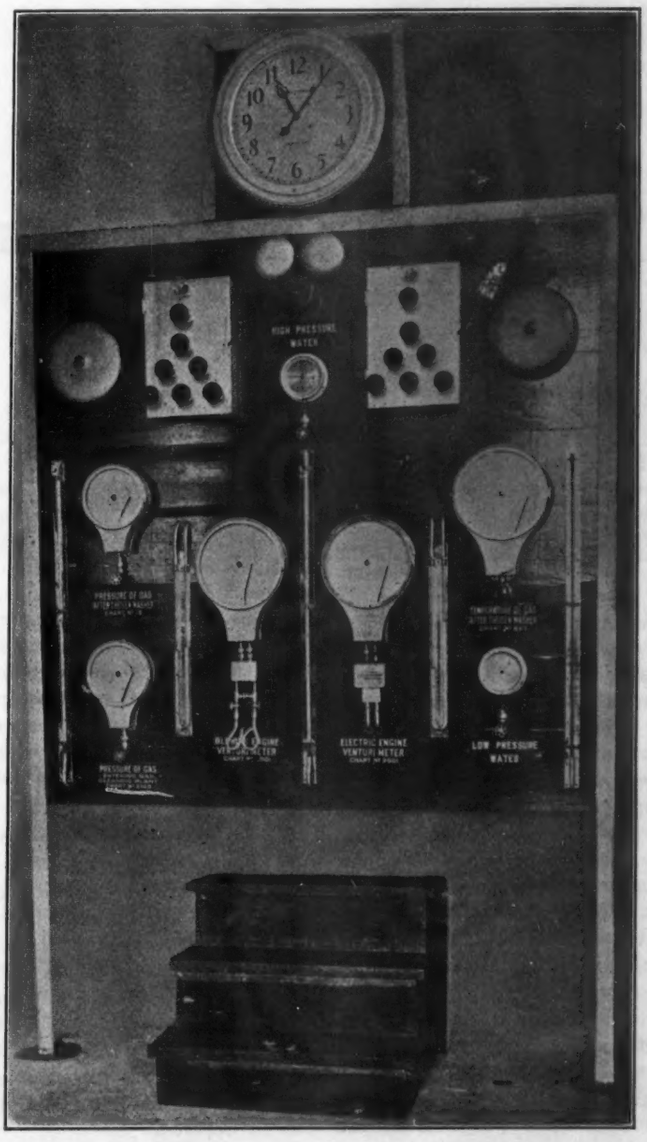


FIG. 39—GAGE BOARD IN THEISEN WASHER BUILDING.

running only about one hour each day, the error is believed to be of little weight. However, it must be kept in mind that on this account the recorded power consumption of pumps and Theisen washers is higher than the actual values. A portable ampere meter for use in the Theisen washer building can easily be attached to each motor and read by the operator every three hours, and the readings are recorded in the daily report sheets. These ampere meter readings give the only indication of the load carried by each Theisen washer. As all washers operate in parallel, one machine, by a slight misadjustment of the inlet and outlet gate valves, may handle more gas, thus carrying more load, and cleaning its share of the gas to a less extent than the other washers. The ampere meter will indicate such an inequality in the load distribution, and the operators have orders to keep the ampere readings on all washers in operation fairly uniform, by proper adjustment of the gate valves. The

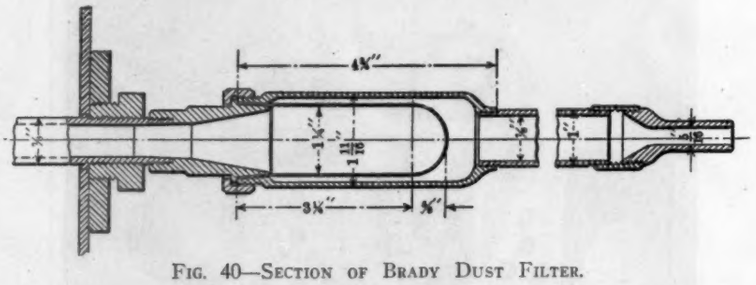


FIG. 40—SECTION OF BRADY DUST FILTER.

indications of the ampere meter, averaged for each month, are used to divide the power charges in proper proportion between the pumps in the preliminary washing plant and the Theisen washers.

Water Consumption. The amount of water consumed each minute in the gas-washing plant is measured by overflow weirs at the settling tank. A hook gage gives directly the number of gallons of water per minute falling over the weir so that the operator reads the water quantity as easily as a thermometer. The settling tank has two compartments, so that the water from the wet scrubbers can be turned into one, while the Theisen waste water is flowing into the other compartment. Gates make it possible to reverse these flows and to shut off each settling tank for cleaning. The amount of water allowed at each wet scrubber and Theisen washer, originally apportioned by means of calibrated barrels, is adjusted in practice by estimating the relative quantity, basing the estimate on the thickness of the stream at each Theisen water inlet and at the wet scrubber overflow. The water used for gas-washing purposes is waste cooling water from the blast furnaces, formerly discharged into the sewer but now collected and piped to the Theisen washers under its natural head, while another part is lifted on top of the wet scrubbers by two centrifugal pumps of 2,000,000 gallons capacity each. These pumps receive the water under 30-foot head and deliver it at a pressure of 80 feet for distribution through the sprinkler system.

Dust and Moisture. Gas engine builders usually specify the amounts of dust and moisture which should not be exceeded for safe operation. Recent specifications call for blast furnace gas containing not more than 0.02 grains of flue dust and not over 10 grains of moisture per cubic foot at 62 degrees Fahr. and 30 inches mercury. With an efficient, modern gas-cleaning plant it is not difficult to meet these conditions, as is shown in the paper. Dust and moisture determinations are made in the gas laboratory, and recorded on daily chemical report blanks. The amount of dust is determined in dry cleaned gas, clean gas and fine gas, and occasionally in the atmosphere, while moisture determinations are made in clean and in fine gas. For purposes of comparison the moisture in the atmosphere, as determined at the dry-blast plant, is also recorded. Results are given in grains per cubic foot of standard gas, and by a simple calculation the efficiency of the wet scrubbers and of the secondary washing plant can be determined each day.

Dust Determinations Difficult.

While frequently tried, it has been found impossible to make dust determinations in raw gas, which give more than a general idea of the efficiency of the dry-cleaning plant. The difficulty is that the raw gas frequently carries larger particles of dirt, which obstruct the sample pipe and clog the dust filter before a gas sample of sufficient size for correct determination can be secured.

A series of tests extending over eight days was made in August, 1908, with the regular dust filter apparatus then in use, but since no results were obtainable, a long glass tube open at both ends and filled with dry calcium chloride was then weighed and attached to the gas main in place of the dust filter. After passing several cubic feet of gas, the glass tube was taken off, closed at both ends and weighed, the difference in weight giving the total amount of dust and moisture. The amount of dust was determined by drying and weighing again as the difference between the second and third weighings. This apparatus was found to be a little more satisfactory, as larger samples could be taken, but gradual filling of the pipe with dust made the accuracy of the result very doubtful. The size of the gas sample never exceeded 6 cubic feet, with an average of about 2 cubic feet.

Tests made in August, 1907, gave similarly unreliable results, as the amount of dust in raw gas, according to these determinations, varied from 0.18 grains per cubic foot at 2 p. m., Aug. 7, to 563.19 grains per cubic foot at 4:30 p. m., Aug. 29. Such extreme variations are improbable, and as the result obtained cannot represent a fair average, raw gas dust tests were discontinued as of questionable value.

Method of Making Tests.

The method and the instrument used for the determination of dust in clean and fine gas were developed by Wm. Brady and L. A. Touzalin. The Brady filter (Fig. 40) consists essentially of a brass cylinder provided with inlet and outlet and supporting the filter itself, which is an ordinary 94 x 33 millimeter Soxhlet extraction shell. The brass cylinder is of such diameter that an annular space of about 3-16 inch is formed between its inner surface and the paper filter. The filtering shell is fastened and held tightly in place without the aid of gaskets, by wedging its open end between the tapering cylindrical faces of the brass shell and the brass nozzle, as shown in the illustration. This method of fastening has the additional advantage that for a distance of about one-half an inch from the edge, the Soxhlet shell is protected from dust deposits so that the filter can safely be handled after the experiment. The brass nozzle forming the inlet of the apparatus is provided with inside threads so that it can be screwed to a sampling pipe. Its inside surface

is perfectly smooth, without ledges or places for the accumulation of dust. A brass nut holds the three parts of the instrument in place. The apparatus may be used in any position, but the preferred arrangement is horizontal.

When the gas to be filtered contains moisture the filtering device must be heated to about 110 degrees Cent. by any suitable means, but preferably by surrounding the brass shell with an electrically heated sleeve, as shown in Fig. 41, which represents the sampling pipe, Brady filter, moisture tube and gas meter assembled for use. The nipple on the outlet end of the brass cylinder is threaded so that it can be removed and replaced by aluminum tubes filled with a dehydrating agent, such as calcium chloride, in case it is desired to determine the moisture in the gas.

Capacity of the Instrument.

The Brady dust filter was chosen for use as a standard intrument on account of its advantages over other methods. It is very simple, easily assembled and taken apart, perfectly tight, and it fulfills the requirement that the gas issuing from the sample pipe should pass over very little surface before being filtered. The principal advantage, however, is the use of a strong cylindrical filter which resists the gas pressure much better than the thin sheet of filter paper used in other instruments. The Soxhlet shell maintains a porous condition even though much fine dust has been deposited owing to the formation of concentric layers of dust and their subequent cracking by the action of gravity and slight jarring. Gas samples of twice the size permissible in other instruments can be passed through the Brady filter. Fig. 42 shows five Brady filter shells after use for determination of dust at the main water seal, before and after the wet scrubbers, after the Theisen washers, and after the power station gas holder. The feature of keeping the filter porous for large samples is noticeable, particularly in the shell on the extreme left.

Whenever determinations of dust and moisture or both, are desired, the instrument must be placed as close as possible to the pipe where the sample is to be taken. The sampling pipe used, shown in Fig. 41, consists of a ½-inch brass pipe curved with a radius of not less than 6 inches and smoothly polished on the inside. It is inserted in the gas flue, if possible on a horizontal diameter at least 15 feet away from any bend or obstruction, to a distance of one-fourth to one-third of the diameter. The inlet opening is reduced to a sharp edge, so that there is as little local disturbance at that point as possible. The question of the proper form of sampling pipe was decided in favor of the curved pipe, against the straight pipe with standard 4-inch insertion in the gas main. Experiments were made at various times to determine the amount of flue dust, by simultaneously using both forms of sampling pipe inserted at practically the same place in the gas flues.

A comparison of the results of these tests shows plainly the difference in the effect of straight and curved sampling pipes on the size of the gas sample, which, generally speaking, is larger with the curved pipe. This advantage is, however, of secondary importance, compared with the material increase in the dust contents recorded by sampling the gas with curved pipes. This increase is particularly noticeable in testing dry cleaned gas, and shows that the heavier particles of dust cannot easily be induced to change their direction of travel to enter the straight sample pipe at right angles, but pass by the opening, which is parallel with the gas stream. The difference in results averages nearly 100 per cent in favor of the curved sampling pipe.

In the clean gas tests this difference is considerably less marked and the average size of the gas sample obtained is even smaller, while the amount of dust recorded when using the curved sampling pipe is only 8½ per cent larger, because the dust remaining in clean gas is of much finer quality and of less specific gravity, so that the particles will much more easily change their direction of travel. No difference at all, however, can be observed when dealing with fine gas. The averages of two series of tests coincide exactly, and only slight deviations are noticeable in the individual readings. The average size of the gas sample taken with the curved pipe is 14 per cent larger than the sample obtained with the straight sampling pipe. This experience is valuable, as it shows that dust determinations in fine gas are very much less influenced by variations in the method of sampling, which further suggests that results will not be materially affected by variations in the instruments and methods used for dust determinations in fine gas.

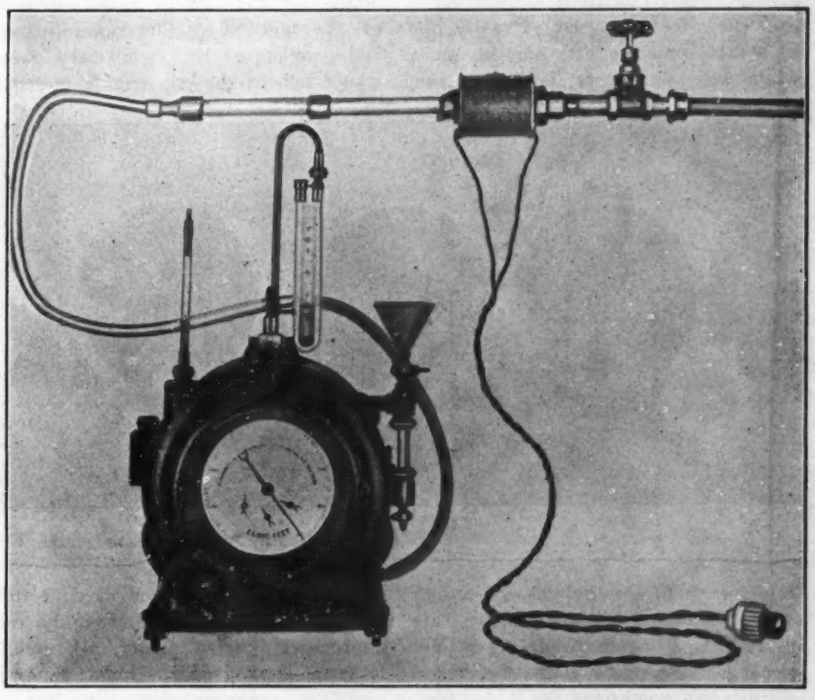


FIG. 41—BRADY FILTER, SAMPLING PIPE AND GAS METER.

As the original gas pressure is usually—in fine gas always—sufficient to cause the gas to flow through the filter, an aspiration of the sample is unnecessary. The determination is made as follows: The Soxhlet shell is first dried and weighed in a glass weighing bottle, then inserted into the brass shell of the apparatus, and the parts tightly connected. A meter

reading is taken after the instrument is connected to the sample pipe and the gas is turned on. The dust contained in the gas sample is deposited in the Soxhlet shell, while the moisture is driven over into the aluminum tubes containing anhydrous calcium chloride, and connected in series. They are capped and weighed before the experiment and their increase in weight represents the moisture in the volume of gas passed through the apparatus, while the increase of weight of the shell after drying gives the amount of dust carried in the gas sample. For dust determinations from 30 to over 200 cubic feet of gas are passed, depending on conditions of pressure and locality, while for moisture determinations only from 1 to 5 cubic feet are used. Usually one or several moisture tests may be made while one dust test is being run, simply turning off the gas for a moment when the aluminum tubes are inserted and again when they are withdrawn. Readings of the meter and of the gas conditions such as temperature and pressure must of course be made at the beginning and end of each test. All results of dust and moisture tests are calculated to grains per cubic feet of standard gas.

The application of the two Brady filters permits continuous determination, a feature of great importance in gas power plants since it permits uninterrupted surveillance of the gas cleaning plant and of its efficiency. Continuous dust determinations are being made every day except Sunday, by sampling dry cleaned gas, clean gas and engine gas. A Brady filter is started at each place at 8:30 a. m., and the gas is allowed to pass until 4:30 p. m., when the Soxhlet shell is removed and a new one inserted, which is in continuous use from 5 p. m. until 8 a. m. the following morning. The average size of sample for day and night runs respectively, is from 60 to 90 cubic feet of dry cleaned gas, 80 to 160 cubic feet of clean gas, and 120 to 200 cubic feet of engine gas. It is evident that such large accumulative samples must very nearly represent a true average of the amount of dust contained in the gas. Occasional dust and moisture determinations usually practiced in the majority of plants are of comparatively little value, as they do not give the true average conditions of the gas. Comparisons of results obtained at different gas-cleaning plants cannot and should not be made and credited, unless all instruments, methods, size of samples, duration of tests, etc., are identically the same. Standardization of the method of determining dust and moisture in industrial gases would benefit the gas engine industry at large, and the method used at this plant, which has been thoroughly and continuously tried under all conditions, is worthy of consideration as a basis for standardization.

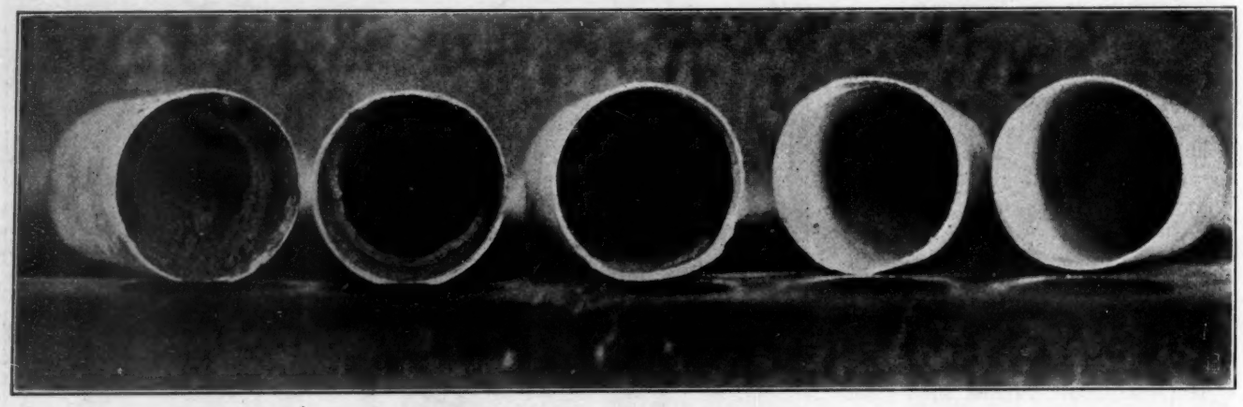


FIG. 42—BRADY FILTER SHELLS AFTER USE.

Method Used for Measuring and Recording Gas Consumption.

The following description of the method used for measuring and recording the gas consumption was contributed by C. J. Bacon.

The amount of gas consumed by the blowing engines at the blast furnaces and the power engines in the electric station, is measured by venturi meters, one in the 54-inch main to the blowing engines and another in the 60-inch main to the power engines. The 60-inch meter was installed first and tested by volumetric measurements, as hereinafter described. The 54-inch meter was subsequently constructed with the same proportions, and as the only difference is in the size no tests have been thought necessary. These meters are of much the usual form, except that certain liberties were taken in the design to simplify the shop work; the throat section of each being a straight cylinder connected to the small ends of the upstream and downstream cones without rounding at the intersections; and there was a similar omission of curvature at the connection between the approach section of 5-foot pipe and the large end of the upstream cone. Although it was realized that these departures from theoretically perfect design were likely to introduce more or less error due to eddy currents, nevertheless in view of the facility with which the accuracy could be determined by means of the gas holder, the somewhat irregular construction was allowed to stand. The absence of test data on meters of this size made tests advisable regardless of how nearly perfect the shape and construction might be.

By referring to Fig. 35 it will be seen that the 60-inch meter has an over-all length of 53 feet 1 inch, and consists of an up-stream cone 11 feet 6 inches long and having openings 60 inches and 20 inches diameter, a straight cylindrical throat section of cast iron 20 inches diameter, 15 inches long, and a downstream cone 39 feet long, likewise with openings 60 inches and 20 inches diameter. The upstream cones are made of plate, with butt-joints and countersunk rivets inside to reduce friction. A cylindrical casting 16 inches long by 60 inches in diameter and containing an annular pressure chamber, is inserted between the straight-approach pipe and the upstream cone. A similar pressure chamber surrounds the throat. Twelve 3-16-inch holes communicate to each of the chambers the pressures existing within the meter at those points. The characteristic equation for flow of gas

in venturi tubes[4] was used in the calibration of this meter.

A number of carefully conducted tests have been made at various times to determine the meter coefficient, utilizing the 100,000 cubic feet gas holder as a means of volumetric measurement. This holder is located about 260 feet from the meter, and is provided with a combination of water-sealed valves such that the flow of gas to and from the holder may be controlled at will. The horizontal area of the holder was accurately determined by measurement of diameters, and a vertical scale of feet and tenths was marked on the outside to permit of determination of the rate of rise of the holder. Observations were taken of:

A Gas pressure in the upstream chamber.

B Difference in pressure between upstream and throat chambers.

C Temperature of gas at meter and holder.

D Analysis of gas, including water vapor contents.

E Barometric pressure.

F Gas pressure at inlet to holder.

Comparisen of Flow Records.

From these data and the dimensions of the meter, values may be assigned in the above-mentioned equation of flow. It is worthy of especial note that the ratio of specific heats for the mixture of gas and aqueous vapor is in this case 1.38, the use of it in the formulae, however, does not result in an appreciably lesser flow than the use of 1.408, the commonly accepted value for air. The net average results of 17 separate holder tests at various rates of flow show a meter coefficient of 0.91, which is taken to mean that the actual flow is 91 per cent of the theoretical flow.

This determination of meter coefficient was made more as a matter of scientific interest than as a necessity, since working curves showing the relation between the difference in upstream and throat pressure and volume of gas at prevailing temperatures and pressures, could have been constructed from test data alone. The meter coefficient, however, being available, it was made use of in connection with the theoretical formula in preparing the curves, from which the volume of gas, reduced to standard conditions of 62 degrees Fahr. and 29.92 inches barometer, may be determined for prevailing temperatures and meter readings. For these curves the absolute pressure of gas in the main is taken as 29.5 inches mercury, which is the sum of the average upstream pressure and the average barometer at this locality.

Daily records of flow of gas are obtained by means of a Bristol differential pressure recorder, located in the Theisen washer building about 250 feet away from the meter and connected to upstream and throat chambers by two lines of pipe. Comparisons of readings at the meter with the recorder shows no error due to the long connecting pipes. The curves of Fig. 2 are used in conjunction with these daily meter charts to obtain the average rate of flow for each day, which, with the calorific value, the kilowatt output of the generators and the generator efficiency, gives the data required for computing the daily average thermal efficiency at the engine shaft.

The monthly averages of these daily data, and the results for the year 1909 are shown in Fig. 37.

Amount of Dust Deposited.

Questions are often raised regarding the amount of dust deposited in meters for blast furnace gas. The 60-inch meter has been examined at six-month intervals. The first inspection showed a slight accumulation of moist dust at and near the throat, but not in sufficient quantity to affect the results appreciably; at the second examination no dirt was found; at the third a considerable coating of dirt was found and was cleaned out, unfortunately without accurate measurement of the average thickness. As a means of determining the effect of the reducing diameter on the flow of gas, a comparison was made of the average thermal efficiency for a week preceding and a week following the cleaning as follows:

	Per cent.
Week preceding cleaning	16.9
Week following cleaning	19.0
Reduction of flow	11.0

As far as known no change occurred at the engines to affect the efficiency; consequently, since the flow through the meter varies directly as the area, the reduced diameter due to dust was $\left(\frac{16.9}{19.0}\right)^{\frac{1}{2}} \times 20 \text{ inches} = 18.8$ inches. Therefore, the average thickness of the coating was approximately 0.6 inch.

The cause of this unusual deposit is ascribed to one of the furnaces making special irons, ferro-silicon and spiegel, during the latter part of August and the entire months of September and October, 1909, or about 68 days, during which the amount of dust found in the raw gas was excessive, as explained previously. On this basis it is assumed that the deposit began late in August and continued at uniform rate through October, when the error amounted to a maximum of 11 per cent. Suitable corrections were made on the monthly averages shown in the tables and charts. To prevent a repetition of the accumulations of dust in the venturi meter a system of spray nozzles (shown in Fig. 35) was installed, for flushing the meter throat thoroughly with high-pressure water.

TABLE XVII.—WET SCRUBBER TEST, OCT. 27, 1908.

	Temperatures.							Quantities.			
	Water. Scrubbers.				Gas. Scrubbers.			Gas.	Water. Gallons per minute.		
Time.	Inlet 1 and 2.	Outlet 1.	Outlet 2.	Outlet 1 and 2.	Inlet 1.	Outlet 1.	Outlet 2.	Cu. ft. per min.	No. 1.	No. 2.	Total.
10.50	63.0	80.0	64.0	73.0	157.0	62.8	60.0	17,000	...	...	1,380
11.00	62.8	77.5	63.0	71.5	156.0	62.8	60.0	17,150	...	...	1,375
11.10	63.0	77.5	63.2	72.0	156.0	62.8	60.0	17,350	...	...	1,375
11.20	63.0	76.5	63.0	71.5	155.0	62.8	60.0	17,150	...	...	1,375
11.30	62.8	77.2	63.0	71.5	155.0	62.8	60.0	17,150	...	...	1,375
Average.	62.9	77.74	63.34	71.9	155.8	62.8	60.0	17,160	816	560	1,376
2.55	63.6	85.5	63.0	77.0	180.0	64.8	62.0	23,100	...	...	1,225
3.05	63.8	85.5	63.0	76.5	177.0	64.8	62.0	23,400	...	...	1,275
3.15	63.8	85.5	63.0	76.0	175.0	64.8	61.5	23,100	...	...	1,225
3.25	63.5	85.0	63.0	76.5	175.0	64.3	61.5	23,250	...	...	1,290
3.35	63.5	87.0	63.2	77.0	176.0	64.3	61.5	23,100	...	...	1,260
Average.	63.64	85.7	63.04	76.6	176.6	64.5	61.7	23,190	752	503	1,255

STRIKE A FAILURE.

Efforts to have the carpenters, electrical workers, bricklayers, plasterers, hoisting engineers, etc., join in the Chicago building trades strike have been fruitless, less than 1,000 men responding to the strike order. Chicago contractors now declare that the general strike movement has fizzled out.

[4]See "The Flow of Fluids in a Venturi Tube" by E. P. Coleman, Transactions A. S. M. E., Vol. 28, 1907, p. 483 for the derivation of this equation.

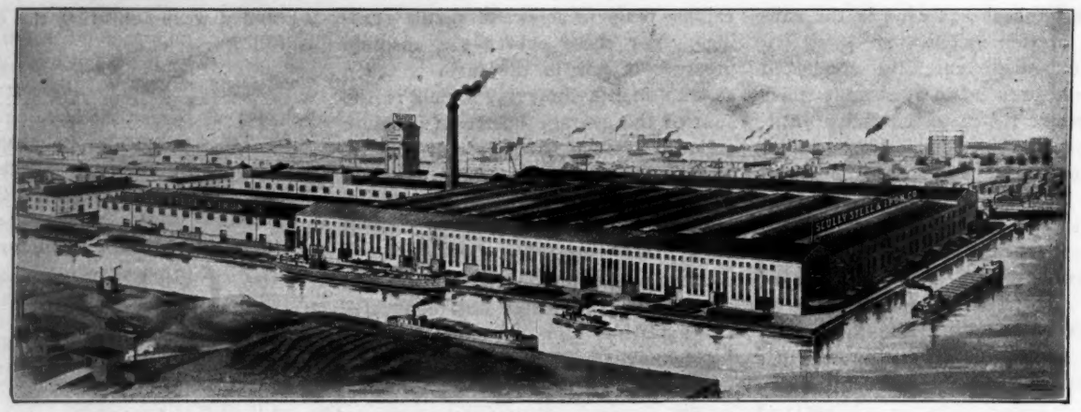


FIG. 1—GENERAL VIEW OF THE SCULLY STEEL & IRON CO.'S PLANT.

A MODERN STEEL WAREHOUSE

As the result of the continued increase in its business of jobbing of iron and steel from store, the Scully Steel & Iron Co., Chicago, found it necessary a few months since to remove its warehouses to a less crowded section, where room was available for necessary expansion. The location selected was on Ashland avenue between Twenty-second and Twenty-fourth streets, occupied by Kelly, Maus & Co., and which the Scully company purchased. The Kelly-Maus plant was already of large capacity, but the new owners made large additions and improvements, which have recently been completed. A general view of the plant, as it now exists, is shown in Fig. 1. In handling and storing material, methods formerly employed have been departed from; for example, in the plate department, in which plates are stored on edge and in racks as seen in Fig. 2 instead of being stacked, and are handled by cranes with nippers, an arrangement resulting not only in economy of floor space but in a large saving of time in selecting and handling. On the other hand, bar stock, boiler tubes and similar material is stored in a horizontal position, facilitating handling by means of crane and slings, as seen in Figs. 3 and 4.

The steel warehouse is 250 x 650 feet, of steel construction, laid out in bays 40 feet, 50 feet and 75 feet in width. The 40-foot bays are used for tubes, bar iron and steel; the 50-foot bays for steel plate stock and the 75-foot widths for shapes and structural material. Each bay is served by 5-ton overhead electric traveling cranes, the wider bays having two each. In addition to these, four traveling cranes serve the space outside the building on the east and west fronts. Most of the cranes are equipped with special scales in the operator's cage, so that the weighing of material either into or out of stock is conveniently done during the handling. Bars and tubes are handled by a cradle device which unloads automatically and all material is handled by cranes and none by hand, so that handling charges are reduced to a very low point. In the bar steel department a whole carload has been unloaded and placed in the racks in 20 minutes.

The sheet steel warehouse is 100 x 300 feet, of steel construction, and contains the complete stock of sheet steel, together with a large squaring shear having a capacity for shearing a ¾-inch plate 10 feet wide at one stroke. The machine is mounted on a turntable and driven by an electric motor. A Scully rotary splitting shear, with a capacity for a ¾-inch plate is also installed. This building also contains the cold rolled shafting, tool steel and band steel stocks, with a railroad switch track on both sides, one for incoming and one for outgo-

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

ing shopments. The office building is 100 x 300 feet, two stories high, the first story being occupied by hardware stock, including rivets, bolts, nuts, lag screws, anvils, chain, hoists, tools and supplies, etc. The general offices occupy the second floor. In the finishing of these offices, wood has been almost entirely eliminated and steel substituted, even to the furniture. Fig. 6 is a central view in the main office and shows the neatness of the steel trim and furniture. The telephone switchboard is seen at the extreme rear, elevated above the general office level, giving the operator a full view of the office at all times. The perfection of the lighting arrangement is a striking feature.

Interior communication is afforded by 50 telephones in all parts of the office and warehouses, and external communication through 15 trunk telephone lines and lines from both telegraph companies.

MOTOR CARS IN JAMAICA.

United States Consul Van Dyne, of Kingston, Jamaica, submits the following report on the motor-car trade in Jamaica:

Until the beginning of the recent tourist season there were not more than half a dozen motor cars owned in the island, but with the advent last winter of the Jamaica Motor Co.—organized and managed by Americans, although there is some Jamaican capital invested in it—there has been a marked increase in the use of automobiles, and there are now over 25 owned here, besides those belonging to the company. This company has at present 15 cars in service—ten 5-passenger, one 4-passenger, three 12-passenger and mail cars, and one large freight truck.

Besides arranging several attractive tours around the island the company maintains a regular daily service for carrying passengers and mail between Kingston and Port Antonio. It has the contract for carrying the mails, and runs Pullman motor coaches, having seating capacity for 12 passengers, with separate compartments for mail and baggage. With a 60-horsepower truck specially fitted for the purpose it carries freight to parts of the island not reached by the railroad. The rates charged for carrying passengers over the regular route in the mail and passenger car are 6 cents per mile; per day for car, $20; per hour, $4.50. The company has a well-appointed garage where repairs are made and machines, supplies and accessories are sold. It handles only an American car. The manager states that the volume of business has exceeded expectations. Another American motor-car firm has a local agency in this city. Motor delivery vans are used by a local bakery establishment.

There are over 2,000 miles of excellent roads in the island, which are constantly kept in repair by the colonial government. The unusual combination of mountain, ocean and tropical scenery afforded here, makes Jamaica a particularly attractive field for motorists. As the country is mountainous and the traffic at times heavy, motors specially constructed for climbing are required. The climate causes exposed metal parts to tarnish quickly, and leather discolors readily. Improvements designed to obviate these difficulties would prove popular. The number of sales of high-priced cars is not likely to be great and the general demand is for a strong, well-made car of moderate price, not to exceed $1,000 to $2,000.

FIG. 6.

DEVELOPMENTS IN IRON AND STEEL ON THE CANADIAN BORDER

An instance of the increasing activity in the Canadian iron and steel field is the development of the town of Welland, Ont., situated about 20 miles west of Buffalo. Less than 10 years ago, Welland was a village. Today it is fast becoming an important steel and iron center.

Up to five or six years ago Welland boasted only one iron industry of any importance, a foundry and machine shop. Today this initial plant has grown to be one of the largest of its kind in Canada, while nearly a dozen growing industries are turning out a wide variety of finished product.

In its growth the town owes much to its fortunate location, to cheap Niagara power, and to the presence of natural gas in apparently unlimited quantities.

The town is divided by the Welland canal, eight miles from its Lake Erie end, and the Canadian government has constructed a turning basin for the loading and receiving of freight. Natural gas can be obtained in a large area to the east, and within 15 miles are four of the largest power plants in the world—three at Niagara Falls and the fourth at DeCew Falls, where the Dominion Power & Transmission Co. develops power at small cost. These companies are selling power at Welland at a low rate. Six railroads touch the town, the Michigan Central, Toronto, Hamilton & Buffalo, Grand Trunk, Wabash, Pere Marquette and Canadian Pacific, and 46 passenger trains make daily stops. These advantages have given Welland the right to boast of securing more Canadian branches of American industries in the last five years than any other town or city in the Dominion.

The plant of M. Beatty & Sons, Ltd., which was the pioneer iron industry of the town, is still reckoned among Welland's leading industries. This concern outgrew its little frame shops about five years ago and moved into large steel and concrete buildings on the canal, which are said to form one of the most modern and complete plants of its kind in Canada. The product is principally contractors' machinery of all kinds, hoisting engines, clam buckets and tubs, centrifugal pumps, dredges, ditchers, derricks, steam shovels, etc. The new plant stands on the easterly bank of the canal, convenient to all railroads, and having a canal frontage of 1,100 feet. The buildings include machine shops, foundry, boiler shop, blacksmith shop, ship plating sheds, etc.

The shipyard is located on the bank of the canal at the north side of the boiler shop. There are two building berths with crane runways 230 feet long, carried on steel towers 35 feet high, on which are two 10-ton Shaw electric cranes for handling the material used in building dredges, scows, etc., and unloading material from cars.

Current is received at a voltage of 2,200 and transformed to 220 volts by three 200-kilowatt transformers.

The plant of the Ontario Iron & Steel Co., Ltd., was completed three years ago. It is directly south of the Michigan Central tracks, east of the canal, and includes a modern steel foundry with a capacity of 8,000 tons of basic open-hearth steel castings per year, in weights up to 20 tons. It is equipped with one 35-ton, one 15-ton, one 10-ton and one 5-ton electric traveling cranes, annealing ovens and the other usual equipment.

The plant is also equipped with two 35-ton basic open-hearth steel furnaces and a 22-inch and 12-inch rolling mill. These mills are driven by electric motors of 800 and 500 horsepower respectively, the power being obtained from Niagara Falls. The yearly capacity of the rolling mill is about 15,000 tons of merchant bars, small angles and special shapes. The plant also finishes railway angles and rail joints and is fully equipped to handle this class of work.

The officers of the company are: President, W. W. Near; vice president, D. H. Friedman; secretary-treasurer, H. Rooke; works manager, A. M. Mosley.

The same officers direct the Page-Hersey Iron Tube & Lead Co., Ltd., which has just started its works at Welland. The company has a complete lap-welding pipe plant in addition to its plant at Guelph, Ont., which has been successfully operated for the past seven years. The capacity of each pipe plant is about 25,000 tons annually, ranging from ¼ to 8 inch pipe for boiler tubes, steam, gas and water pipe in standard and extra weights, both in wrought iron and steel, galvanized and black.

The Canadian Billings & Spencer, Ltd., drop forgings, is the only drop forging concern in Canada. Starting operations three years ago, it is turning out $100,000 worth of product annually and preparations are making to double next year. The company is equipped for making all its own dies. The buildings are of reinforced concrete. Officers of the company are: President, P. C. Billings; vice president, W. H. Comstock, Brockville, Ont.; secretary-treasurer, W. S. Buell, Brockville; managing director, J. G. Gardner, Welland; directors, Robert Bowie and John M. Gill, Brockville.

The Canada Forge Co. began operations in 1907 and the plant is turning out iron and steel forgings of every description. A specialty is made of crank shafts, but forgings of all descriptions are made up to 10,000 pounds either in the rough or finished. The capacity of the plant is about 1,500 tons of finished forgings yearly. The power used is also obtained from Niagara Falls. The officers of the company are: President, T. J. Dillon; vice president, J. L. Emerson; secretary-treasurer, F. C. Hesch.

The Dain Mfg. Co. has just started a plant some distance south of the town to manufacture hay machinery of all kinds and is now filling a $25,000 order from South America. The officers are: President, Joseph Dain, Ottumwa, Ia.; vice president, F. M. Hunter, Ottumwa; secretary-treasurer, Paul Arbenz, Ottumwa; superintendent, William Edestrand, Welland.

The Superior Heating Co., Ltd., which manufactures stoves, is among the later industries to locate at Welland.

Quality Beds is another iron-using concern which is rapidly increasing. The capacity is now 1,000 beds weekly. The business was established in 1905.

The Electro Metals, Ltd., is among Welland's important industries. Its product is exclusively ferro-silicon, and electric power is used exclusively. The plant is equipped with five electric furnaces consuming from 5,000 to 7,000 horsepower.

A GERMAN AUTOMATIC GEAR HOBBING MACHINE.

For some time American machine tool builders have been devoting attention to the design of automatic gear hobbing machinery intended particularly for the production of helical gears and a number of machines of this character are on the market. European builders have also been giving some attention to this field and a hobbing machine manufactured by H. Pfauter, of Chemnitz, Germany, which embraces a number of original features, is presented herewith.

The general features of the tool are clearly shown in the illustration. The machine is fully automatic, when hobbing either worm or spiral gears.

The spiral hob by which the gear is generated may be described as a circular rack, the thread of which is a correctly-shaped rack tooth. The pitch of the threads on the hob is of course the same as the pitch of the

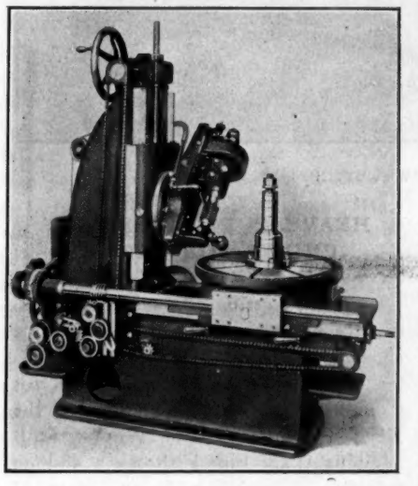


FIG. 1.

required gear. In conjunction with a gear blank on the generating machine, the hob produces an ideal shaped tooth, for it removes only that part of the blank that interferes with its free rotation. This generating principle, as employed on this machine, automatically forms the correct curve required by any gear within the capacity of the machine being used. But one hob is required to generate gears with any number of teeth of the same pitch, from small pinions to wheels of a diameter equal to the full capacity of the machine.

The machine is driven from a countershaft through a cone pulley, and an internal bevel gear train. The spindle is driven through intermediate miter gears on the swiveling center of the hob headstock. The vertical feed of this headstock is obtained from a feed bracket through a chain to worm and worm wheel.

When hobbing worm wheels, a horizontal feed to the table is necessary, and this is obtained from the same bracket through chain, worm and worm wheel, and a revolving horizontal screw and fixed nut. The feed drive is shown at A in Fig. 1. Each of these feed motions can be immediately started or stopped by means of a drop-out worm box.

The saddle is provided with adjustment for taking up wear and has both hand and automatic feed. The whole bracket carrying the spindle is arranged to swivel for cutting helical gears of varying pitches as seen in Fig. 2, and the swiveling movement is indicated in degrees.

The table sub-base has a horizontal movement on the bed, which may be operated either by hand or power. The table which is mounted on this slide, is revolved by positive gearing. The cutter spindle and the table are connected with each other by change gears. A swing frame is provided for making the necessary changes to obtain the proper speed ratio.

When hobbing a spur gear the hob is set at an angle relative to the axis of the gear cut equal to the pitch angle of the thread of the hob, and the table is adjusted to give the proper depth of tooth. The change gears for table rotation are selected according to the number of teeth to be cut. The feed of the hob is downward.

When hobbing spiral gears, as shown in Fig. 2, the hob is set according to the instructions furnished with the machine. The feed of the hob is downward, and a special train of differential gears are put into action.

In hobbing a worm gear, the hob is set horizontal, as shown in Fig. 3. The table carrying the gear blank feeds towards the hob, and when the proper depth of tooth is reached, an automatic tripping motion stops the feed.

The machine is extremely simple in manipulation, and the work is always in sight.

The machine is sold in the United States by Hill, Clarke & Co., New York.

THE POWER REQUIREMENTS OF MACHINES AND TOOLS.

It is well known in fitting motor drive to machine tools there is a strong tendency to install too large a motor. This arises from the fact that the power requirements of the machine are seldom known with any degree of accuracy and the power necessary is often guessed at and then a liberal allowance added in order to be on the safe side. This results in considerable loss in efficiency because the ordinary motor is most efficient at or near its designed full load. It often occurs also, that the power required to drive a machine changes with the character of work done and the methods employed, so that a motor which was at one time the proper size may now, under different conditions, be either too large or too small. Determination of the power actually required or delivered by the motor by simple volt meter and ammeter readings is a comparatively easy matter and where electric drive is used motors can be changed without much trouble and tests often show that changes would be desirable and would promote effi-

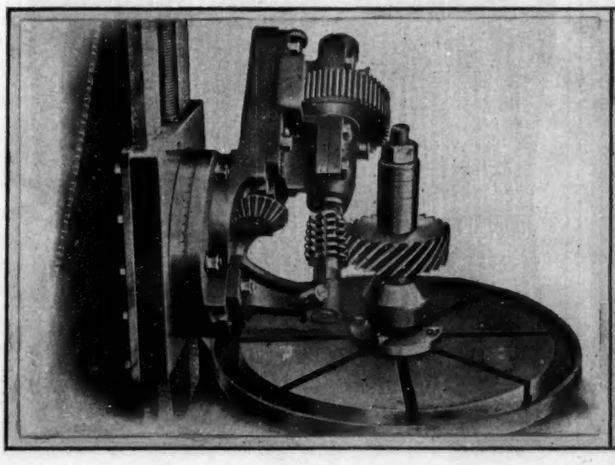


FIG. 2.

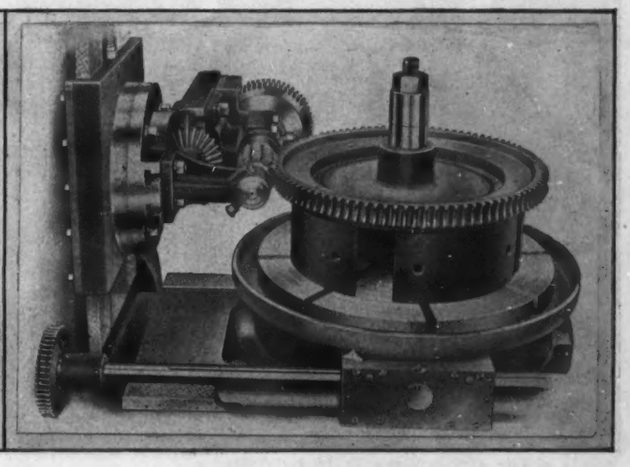


FIG. 3.

ciency. The following changes were made as a result of volt-ammeter tests of the electrically driven tools in a large foundry:

One 40-horsepower, six-pole motor, rated at 975 revolutions per minute light and 840 revolutions per minute loaded, driving a Root blower, one hour after starting took 26 kilowatts. A 35-horsepower motor was substituted for this motor at 900 revolutions per minute.

One 5-horsepower motor, 1,200 revolutions per minute, driving a sand mixer, when running light took 0.92 kilowatts, and when running loaded 1.84 kilowatts. This motor was replaced by a 4-horsepower motor at 1,200 revolutions per minute.

One 7-horsepower motor, running at 950 revolutions per minute, driving a suction fan for rattlers, with usual load, took 2.86 kilowatts. The motor was replaced by a 5-horsepower motor running at 1,800 revolutions per minute.

One 30-horsepower motor, running at 650 revolutions per minute, driving a line shaft and three rattlers, light, took 2.2 kilowatts; driving one rattler loaded, 3.5 kilowatts. The motor was replaced by a 7.5-horsepower motor running at 1,200 revolutions per minute.

One 2.5-horsepower motor, rated speed 1,620 revolutions per minute, driving a double grinder, with grinder idle took 0.68 kilowatts, with two men grinding light castings, it took from 1.1 to 1.8 kilowatts. A 2-horsepower motor was substituted at 1,800 revolutions per minute.

One 2-horsepower motor, running at 1,280 revolutions per minute, driving a 36-inch exhaust fan, removing gases from core room and ovens, with normal load, took 1.8 kilowatts. It was replaced by a 3-horsepower motor running at 1,800 revolutions per minute.

One 2.5-horsepower motor at 1,800 revolutions per minute, driving a 36-inch band-saw, a 14-inch bench saw and a 7-inch lathe, showed the following conditions: Motor driving shaft light took 0.65 kilowatts; driving band-saw on 2-inch pine stock, took 1.1 kilowatt; driving band-saw, with 2-inch plank on bench saw, took 3.3 kilowatts. This load was so excessive that the motor speed was reduced to 70 per cent of normal. The motor was replaced by a 5-horsepower at 1,800 revolutions per minute.

The original motors were all of the direct current type designed to operate on a 500-volt circuit; the new machines were all three-phase, alternating current motors wound for 550 volts.

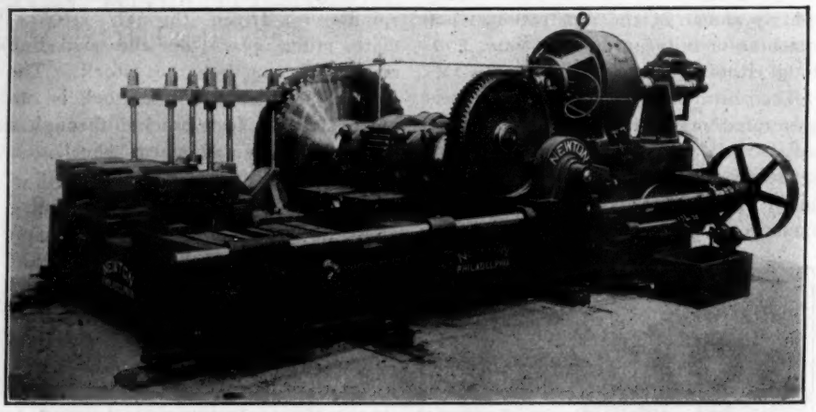


FIG. 2—NEWTON COLD SAW CUTTING-OFF MACHINE.

HEAVY CUTTING-OFF MACHINES FOR LARGE-SIZE STOCK.

Cold-saw cutting-off machines of unusually heavy construction and with a capacity for large size ingot and billet stock have lately been built for a number of establishments by the Newton Machine Tool Works, Philadelphia, Pa. Fig. 1 shows a 48-inch machine in operation in the plant of the Erie Forge Co., Erie, Pa. The diameter of the ingot seen in this view was 44 inches and the time required for cutting off was seven hours, which included turning the ingot four times and sawing towards the center, leaving a central section about 6 inches in diameter, which was broken apart. The cut was made by a 48-inch Disston inserted tooth saw and the inability to cut the ingot entirely through was, of course, due to the limited diameter of the saw. The machine, as well as that shown in Fig.

FIG. 1.

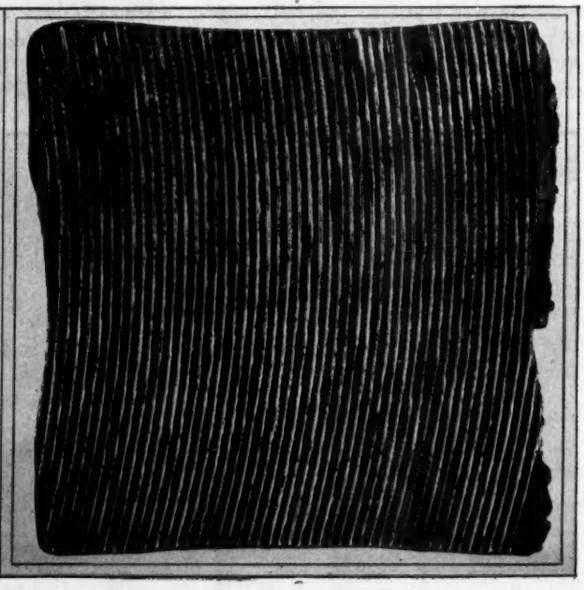


FIG. 3.

2, belong to the class in which the spindles are extended to permit the use of a second saw for work on crank shafts or for cutting multiple lengths from bars, and which are spaced by means of washers which permit of any adjustment from ½ inch to 10 inches between centers of saws. The leading specifications of the 48-inch machine, shown in Fig. 1, are as follows: Diameter of saw blade 48 inches, maximum distance between centers of saws 10 inches; capacity for round stock 15 inches; capacity for square stock 13½ inches; length of feed 32 inches; size of work tables 36 x 40 inches; size of motor required, 25 horsepower. Fig. 3 shows a 12-inch billet of 0.07 carbon steel, which was cut off in 10 minutes on the 36-inch machine. Though these rates of speed may appear excessive, the builders maintain that machines of such a substantial character are essential to eliminate chattering, a feature which is vitally necessary for the successful operation of inserted-tooth saws.

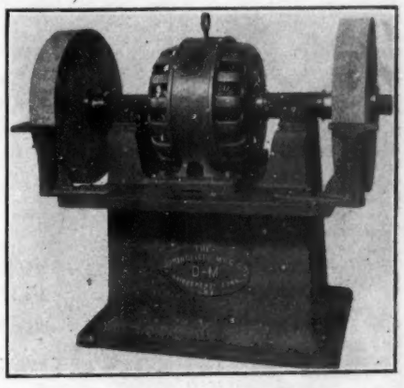
The spindles of these machines revolve in brass fitted capped bearings having an over all length equal to the diameter of the saw and driven through a compound spur gear with coarse-pitched teeth and very broad faces and worm gear, the wheel being of solid bronze and the worm being of hardened steel with roller thrusts. The spindle saddle is gibbed to the base with provision for adjustment by means of taper shoes. A constant friction feed, variable between ¼ and 2 inches per minute, with power quick return, is provided, and also adjustable automatic and positive safety release. As may be seen in Fig. 2 the fast traverses and the drive for the saw are independent, although both are mounted on an extension of the motor shaft, thus permitting the backing out of the saw while stationary. The saws are driven by four bolts extending clear through washers and blades, in addition to which there is a large clamping nut to the double key way driving the washers.

The stresses under which these modern machines are operated with the inserted-tooth saws have necessitated fitting solid bronze worm wheels and roller thrust bearings instead of the ordinary multiple thrust collars formerly used, and data collected over extended periods shows that these refinements not only add to the life of the machine but assist materially in securing a much greater output.

A MOTOR DRIVEN DRY GRINDER.

The accompanying photograph exhibits an example of the extreme simplicity very often obtainable with direct motor driven machines. While the equipment possesses all the advantages inherent in the use of electricity in this class of service, its most salient features are its space economy and that it is entirely self-contained.

The grinder is built by the Springfield Mfg. Co., Bridgeport, Conn., and is known as Type D M dry grinder and carries wheels 24 x 4 inches. The motor is a Westinghouse induction,



SPRINGFIELD MOTOR-DRIVEN DRY GRINDER.

type CCL with shaft extended to carry the wheels. The regular bearings are omitted and their place supplied by the self-oiling bearings, which are integral with the grinder frame. It is an excellent instance of intelligent, workmanlike design with simplicity reduced to its very lowest terms.

WATER POWER DEVELOPMENT IN SWEDEN.

Consul-General Winslow, of Stockholm, reports that the water power of Sweden is estimated to be able to furnish 10,000,000 horsepower if properly handled. This energy can be made available for at least nine months of the year. Of the great falls of the kingdom 75 per cent are in Norrland. The government wishes to get in working order as much of the power as possible. The state at present owns 277 falls, the largest of which is Trollhätten, which is expected to produce 80,000 horsepower, but at present is only producing half that amount. At the Porjis falls, in northern Sweden, 50,000 turbine horsepower is expected to be realized.

NEW CATALOGS.

VACUUM HEATING.—The Bishop & Babcock Co., Cleveland, has just issued a 32-page 6 x 9-inch catalog descriptive of its vacuum heating system and apparatus, with numerous illustrations of buildings of various types in which it has been installed.

LEVER SHEARS.—Bulletin No. 10, by the American Roll & Foundry Co., Canton, O., has just been received, describing a line of lever shears for heavy duty with capacities up to 5 inches square.

LIQUID WEIGHERS. — Catalog W-182, from Henry R. Worthington, 115 Broadway, New York, is just off the press and describes the Worthington liquid weighing apparatus, with list of sizes and capacities and complete details of construction.

SAND RAMMERS.—Bulletin 8108, by the Ingersoll-Rand Co., 11 Broadway, New York, describes the crown pneumatic floor and bench rammers and gives comparative costs of ramming molds by hand and with the pneumatic rammer.

AIR COMPRESSOR GOVERNORS.—Bulletin No. 390 has been issued by the National Brake & Electric Co., Milwaukee, and is descriptive of the National governors, designed for automatically starting and stopping motor-driven air compressors as applied to street car brake service.

ELECTRICAL APPARATUS.—The following bulletins have been issued by the General Electric Co., Schenectady, N. Y.:

Bulletin No. 4727 illustrates and describes two types of sewing machine motors which may easily be applied to any of the standard sewing machines of either drop head or stationary head types. These motors are intended for ordinary domestic use, and are made for alternating and direct current of standard voltages.

Bulletin No. 4737 illustrates and describes an electric hardening furnace for hardening or tempering of tool steel and contains sectional views of the furnace, diagrams of electric connections and a chart showing power required in operation.

Bulletin No. 4738 describes three sizes of polyphase 60-cycle generators of the belt-driven revolving-armature type for small isolated plants and ranging in capacity from 7½ to 25 kilowatts.

Bulletin No. 4740 describes a line-drop compensator for alternating current circuits by means of which the actual voltage at the point of distribution may be read off the voltmeter at the generating station.

Bulletin No. 4741 is devoted to luminous arc lamps for direct current multiple circuits, designed principally for shops and factory yards.

Bulletin No. 4742 treats of an electric drive in grain elevators and flour mills, with illustrations of application.

Bulletin No. 4739 describes the G-E Mazda incandescent lamp, with tables of cost of operation and life and relative cost of lighting with various lamps, etc.

Bulletin No. 4744 describes a new meter testing rheostat for calibrating service watt meters.

Bulletin No. 4736 treats of various types of lightning arresters for alternating and direct current and high and low voltage circuits.

Bulletin No. 4732 contains over 50 illustrations of installations of Curtis turbo-steam generators of various capacities and is a very attractive publication.

Market Collapse Followed by Gains

The stock market last week was highly irregular. During the early part of the week, there was a collapse in which nearly all the leading issues made new low records for the year, and this was followed by a vigorous gain later in the week, from which there were some recessions Friday. The condition of the market was largely the result of the forced liquidation by the Pearson syndicate.

Monday, the market was weak and closed at the lowest prices of the year. Gold to the amount of $2,250,000 was engaged in London for shipment to New York. Tuesday, the market was active and 1,279,000 shares were traded in. Declines ranging up to 30 points followed active liquidation. The United States Steel Corporation declared the usual quarterly dividends and made a satisfactory report. Wednesday, the market regained confidence and prices advanced. Thursday, the market was strong all day, prices closing from one to four points higher. The report that Kuhn, Loeb & Co. had headed a syndicate to take over the Pearson holdings, was confirmed. Friday, the market was somewhat less strong, and prices declined on profit taking. The Atlas Portland Cement Co. suspended dividends on its issue of $12,500,000, in order to devote profits to betterments. Sloss-Sheffield broke violently on reports of unfavorable dividend action. Saturday, the market was dull, and heavy.

Money on call ranged from 2¼ to 1 per cent, and closed Saturday nominally at 2 per cent. Time money was offered liberally, and there was a fair demand. Clearings throughout the United States were estimated at $2,962,358,170, against $2,744,979,968 the week before, and $2,743,598,764 for the corresponding week of the year before. The actual report of clearing house banks showed loans increased $20,358,900; deposits increased $29,002,400; surplus increased $1,207,300, and the ratio of reserve, 28.9 unchanged. Trust companies and non-member banks reported loans and investments decreased $21,104,100; total deposits decreased $4,344,300; and the percentage of reserve 17.7, against 17.5 the week before. Exports of gold from New York were reported at $145,400, and imports at $2,858,986, nearly all from London.

Failures were reported as numbering 235, against 249 the week before, and 227 the corresponding week of the year before. Liabilities in failures for July were $9,201,548, against $8,108,367 for the same month last year. The fortnightly statistics of the American Railway Association showed a decline of 9,546 cars in the number of idle freight cars during the two weeks ending July 20. Steerage arrivals during the week numbered 12,015, against 17,035 the week before. The number of shares sold on the New York stock exchange was 4,834,600, against 2,711,000 the week before, and 3,659,299 the corresponding week of the year before. Bonds, other than government bonds, were sold to the value of $12,673,000, against $5,582,999 the week before, and $22,115,000 the corresponding week of the year before.

THE LEADING INDUSTRIAL SEC URITIES.

	Closing Quo. July 30	Changes in week	Annual Meeting Date 1910	Stock Outstanding	Basis	Dividend Last Dividend	Dividend Date Last Div. Pay.
Allis-Chalmers	9	+ ⅜		$19,820,000			
Allis-Chalmers, pr	28	—2		16,150,000	7 cum.	1¾ Q.	Feb., 1904
American Can	8⅛	+ ⅛	Feb. 2	41,233 300		1¾ Q.	
American Can, pr	66½	+ ⅞		41,233,300	7 cum.	1¾ Q.	July, 1910
Am. Car & Fdy	44	—2¾	June 24	30,000,000		½ Q.	July, 1910
Am. Car & Fdy., pr	109½	—2⅜		30,000,000	7 n. c.	1¾ Q.	July, 1910
American Loc	33	—3	Oct. 18	25,000,000	5	1¼ Q.	Aug., 1908
American Loc., pr	105	—1½		25,000,000	7 cum.	1¾ Q.	July, 1910
American Ship	79¾	— ¼	Oct. 12	7,600,000	4	2a.	Sept., 1910
American Ship. pr	108½	.....		7,900,000	7 cum.	1¾ Q.	July, 1910
Am. Steel Foundries(new)	42¾	—3½	Dec. 1	17,184,000		1¾ Q.	
Barney & Smith	30	.....	June 7	2 000,000	4	.....	Sept., 1907
Barney & Smith, pr	100	.....		2,500,000	8 cum.	1 Q.	June, 1908
Bethlehem Steel	24	.....	April 5	14,862,000		.....	.....
Bethlehem Steel, pr	53	.....		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	41¾	— ¼	Mar. 15	45,000 000	5	1¼ Q.	May, 1910
Cambria Iron	44½	— ½		8,468,000*	4	2 S. A.	Apr., 1910
Chicago Pneumatic Tool	31½	—2½	Feb. 21	6,145,000	4	1 Q.	Apr., 1910
Colorado Fuel	26½	—3⅜	Oct. 17	34.235,500		1¾ Q.	Apr., 1902
Crucible Steel	11	+ ⅛	Oct. 19	24,578,400		3½.	.....
Crucible Steel, pr	72½	—1½		24,436,000	7 cum.	2⅛ Q. †	June, 1910
Empire Steel	8	.....	Feb. 23	1,254,770		.....	.....
Empire Steel, pr	60	.....		2,500,000	6 cum.	3 S. A.	July, 1910
Fay & Egan	70	.....	Feb. 15	1,000,000	7	3 S. A.	Feb., 1910
Fay & Egan, pr	115	.....		1 000,000	7 cum.	1¾ Q.	Nov., 1909
General Electric	138	—1¾	May 10	65,179,600	8	2 Q.	July, 1910
Harbison-Walker	32	.....	Jan. 17	18,000,000		½ Q.	June, 1910.
Harbison-Walker, pr	92½	.....		9,600,000	6 cum.	1½.	July, 1910
International Pump	39	—2	May 10	17,762,500		1 Q.	Apr., 1905
International Pump, pr	79⅜	— ⅜		11,350,000	6 cum.	1½ Q.	Aug., 1910
Lackawanna Steel	.....	.....	Mar. 9	34,978,000		.....	.....
Lake Sup. Corp	17½	+ ¼	Oct. 5	40,000,000		.....	.....
New York Air Brake	70½	—1½	June 16	10,000,300	8	1½ Q.	July, 1910
Niles-Bement-Pond	98	.....	Feb. 2	8,500,000	6	1½ Q.	June, 1910
Niles-Bement-Pond, pr	104	.....		2 000,000	6 cum.	1½ Q.	May, 1910
Otis Elevator Co	45	—4	Mar. 21	10,000,000	3	1½ S. A.	Oct., 1910
Otis Elevator Co., pr	90	—3½		6,500,000	6 n. c.	1½ Q.	July, 1910
Pa. Steel	65	.....	May 9	10,750,000		.....	.....
Pa. Steel, pr	106½	— ½		16,500,000	7 n. c.	3½ S. A.	May, 1910
Pittsburg Coal Co	14½	— ⅝	Mar. 8	28,104,600		.....	.....
Pittsburg Coal Co., pr	62	—2⅞		27,071.800	7 cum.	1¼ Q.	July, 1910
Pressed Steel Car	29	.....	Feb. 16	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr	91⅛	—3⅜		12,500,000	7 n. c.	1¾ Q.	Aug., 1910
Pullman	158	+1½	Nov. 9	120,000,300	8	2 Q.	Aug., 1910
Railway Stl. Spring	29¾	— ½	Mar. 3	13 500,000	2	1 S. A.	Oct. 1908
Railway Stl. Spring, pr	92	.....		13,500.000	7 cum.	1¾ Q.	June, 1910
Rep. Iron & Steel	28½	—2	Oct. 19	27,191,000		.....	.....
Rep. Iron & Steel, pr	90	.....		20,416,900	7 cum.	1¾ Q.	July, 1910
Sloss-Sheffield	48½	—13½	Mar. 9	10,000,000	5	1¼ Q.	June, 1910
Sloss-Sheffield, pr	114	.....		6,700,000	7 n. c.	1¾ Q.	July, 1910
U. S. Pipe & Fdy. Co	15	+ ½	June 22	12,106,300	2	1 Q.	Dec., 1907
U. S. Pipe & Fdy. Co., pr	54	—2⅛		12,106,300	7 n. c.	1¾ Q.	Mar., 1910
U. S. Steel	66¾	+1⅛	April 18	508,302,500	5	1¼ Q.	Sept., 1910
U. S. Steel, pr	115	+ ½		360.281,100	7 cum.	1¾ Q.	Aug., 1910
U. S. Steel 5s	102⅜	— ⅜		463 798,000	5	.....	Jan., 1910
Va. Iron, Coal & Coke	58	.....	Sept. 20	9,073,680		.....	Mar., 1910
Westinghouse Elec	54¾	—3	July 27	27,173,200*		1¾ Q.	Mar., 1910
Westinghouse Air Brake	136	— ½	Oct. 4	14.000,000*		6 Q. ‡	July, 1910

Par value of shares $100, except those starred (*), $50.
† Includes ⅛ per cent extra.
‡ Includes 1½ extra and 2 special.
a Includes 1 per cent extra.

Copper Stocks.

New York.—Amalgamated Copper closed at 61½, ex-dividend, an advance of 3.

Boston.—Butte Coalition closed at 18, an increase of ⅞; Calumet & Arizona closed 30, a decrease of ½; Calumet & Hecla closed 521, an increase of 10; North Butte closed 23¾, an increase of ¼; Quincy Mining closed 71, an increase of 1.

Financial Notes.

The regular dividend of 25 cents a share, payable Sept. 1, has been declared by the Butte Coalition Mining Co.

The Pressed Steel Car Co. has declared the regular quarterly dividend of 1¾ per cent on preferred stock, payable Aug. 24.

The International Smelting & Refining Co. has declared the regular quarterly dividend of 2 per cent, payable Sept. 2.

PRESENTATION TO WILLIAM G. MATHIAS.

After 23 years continuous connection with the South Works of the Illinois Steel Co., at South Chicago, Wm. G. Mathias goes to Ensley, Ala., to assume the duties of assistant general superintendent of the Tennessee Coal, Iron & Railroad Co., another subsidiary of the United States Steel Corporation. Mr. Mathias began work as a water boy, and steadily advanced until at the time of his latest promotion he was superintendent of the structural and blooming mills at South Works. He comes from a family of steel makers, his grandfather having been a mill man, and his father, David S. Mathias, was general superintendent at South Works in the years 1888 and 1889; his brother, David R. Mathias, is general superintendent of the Illinois Steel Co.'s Joliet plant; another brother, Thomas H., is assistant general superintendent of the Lackawanna Steel Co.

Mr. Mathias' associates, in an informal way, presented him a set of solid flat silverware, at the works, Saturday noon, the presentation remarks being made by General Superintendent William A. Field. The employes of the structural and blooming mills gave him some handsome presents earlier in the day. In the evening, a banquet was tendered Mr. Mathias by his associates, at the Sans Souci cafe, an interesting and somewhat unusual feature of which being the rendering of a fine musical program.

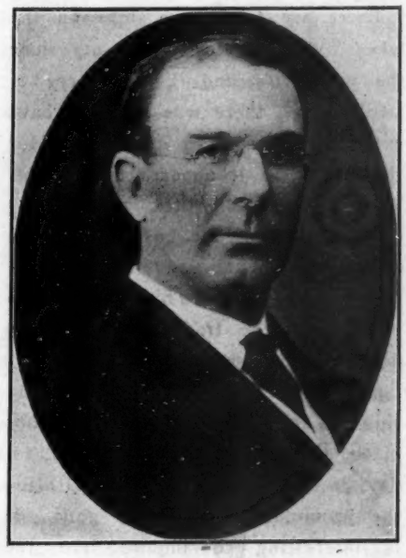
James Walsh, assistant superintendent of the slabbing mill, succeeds Mr. Mathias at the structural and blooming mills, and John Caldwell has been placed in charge of the slabbing mill.

CONSUL REPORTS ON WELSH TIN PLATE TRADE.

Consul Lorin A. Lathrop, reporting from Cardiff, Wales, on the Welsh iron and tin plate trade, says:

The total output of iron and steel in South Wales is 900,000 tons per annum, the annual export being something under 200,000 tons, so that the large proportion finds inland markets. The local demand is for tin plates and galvanized sheets, of which South Wales is the leading manufacturing district in the United Kingdom. The South Wales pig iron furnaces have to be entirely fed with foreign ore, nearly all of which comes from Spain. The annual imports of iron ore into South Wales exceed 1,500,000 tons, of which the quantity into Cardiff in 1909 totaled 662,000 tons, the smallest figure since 1898, the price for 50 per cent Spanish ore, c. i. f., averaging about $5.10 per ton.

Mainly owing to the great growth in the demand for oil cans, the tin plate industry has not only suffered no reaction after the great boom of 1907, but has steadily increased in prosperity. Shipments from South Wales ports in 1909 were 375,969 tons, and during the first five months of 1910 there was an increase of 25,000 tons over the same period of 1909. Mills and machinery are in full work, additional mills are in course of erection, and workingmen have no difficulty in securing continued employment at high wages.



WILLIAM G. MATHIAS.

KRUPP'S ANNUAL REPORT.

The usually brief annual report of the Friedrich Krupp Co., Essen, Germany, has just been issued, showing that the total number of employes of the company is 68,905, as compared with 63.540 last year. At the Essen works alone 37,848 persons are employed.

Record Sale of Ramblers.—Four hundred Rambler cars were sold by the P. J. Downes Co., of Minneapolis, to farmers in the states of Minnesota and the Dakotas during the first six months of 1910. The average price per car was $2,250. Because the sales of Ramblers in the cities have been exceptionally large and the average price is above $2,000, this record sale in the agricultural districts is considered remarkable. It demonstrates that farmers are buying cars of better quality and are not confining themselves to those of low value.

The Perry Iron Co., Erie, Pa., blew out its stack, July 21, for relining.

COAL LANDS

Opened by a New Railroad—Building Coke Ovens.

Louisville, July 30.

The construction of the Wasioto & Black Mountain railway, which is being built by the Louisville & Nashville from Wasioto, Bell county, to Harlan, is resulting in the development of plans for the operation of large sections of coal lands which have heretofore not been worked on account of lack of transportation facilities. The new operations are expected to consume an immense amount of equipment.

The Wisconsin Steel Co. is now doing the preliminary work of constructing 400 coke ovens on its holdings in the vicinity of Looney's Creek. The company controls 23,000 acres. W. C. Tucker is resident manager of the enterprise.

T. J. Asher & Sons, of Wasioto, are opening two large mines on the new railroad, one on Crane creek and the other on the Cumberland river. The Bell County Coal Co. has leased 850 acres on Terry's fork and will install equipment for operating. F. B. French, of Knoxville, has leased three tracts in Harlan county and is preparing to operate them. The Clover Fork Coal Co., of Harlan, has leased 800 acres and will begin mining operations.

Other mines will be opened as work on the railroad advances. It is expected that the road will be completed by Nov. 1.

SIX MONTHS' REPORT.

The Bethlehem Steel Co. and subsidiaries report for the six months ending June 30 the following net income, after deduction of charges, $1,161,930, compared with $603,703 for the same period last year.

The building at Pearl street and Burling Slip, formerly occupied by the New York metal exchange, has come into the possession of Joseph F. Cullman, who has obtained it from the original purchasers from the metal exchange association. The building is one of the land marks of its part of the city and has been occupied by the New York metal exchange for the last 30 years. The metal exchange is now located in the Trinity building, 115 Broadway, where the directors have taken a ten-year lease of space.

THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades.

PUBLISHED EVERY THURSDAY BY
THE PENTON PUBLISHING CO.
CLEVELAND.

BUFFALO.....932 Ellicott Sq.
CHICAGO.....1328 Monadnock Blk.
CINCINNATI.....11 Blymyer Bldg.
NEW YORK.....1115 West St. Bldg.
PITTSBURG.....510 Park Bldg.
SEATTLE.....942 Henry Bldg
WASHINGTON, D. C.....Post Bldg.

Subscription, United States and Mexico, $3.00 per annum. To Canada and Foreign Countries, $4.50. The price of copies issued three months or more previous to date of current issue will be 25 cents each. Advertising rates furnished on application.

Change of advertising copy must reach this office ten days preceding date of publication.

The Cleveland News Co. will supply THE IRON TRADE REVIEW through the regular channels of the American News Co.

European Agents: The International News Company, Breams Building, Chancery Lane, London, E. C., England.

ENTERED AT THE POST OFFICE AT CLEVELAND AS SECOND CLASS MATTER.

PRINTED IN AN OPEN SHOP.

COPYRIGHT 1910 BY PENTON PUBLISHING CO.

THE AVERAGE PAID CIRCULATION OF THE IRON TRADE REVIEW FOR THE ISSUES OF THE FOLLOWING MONTHS WAS:

January, 1910	5,681
February	5,703
March	5,754
April	5,793
May	5,827
June	5,842
July	5,864

August 4, 1910

SURPLUS OF SHIPS.

It is a very remarkable business that is now being handled on the Great Lakes, a business so remarkable that we cannot find its parallel anywhere or at any time. An enormous volume of trade is moving without so much as a squeak to be heard anywhere in the far-flung and complex machinery that handles it—a trade so prodigious that it has never been equaled at this period of the year, yet flowing easily and silently while more than half a hundred ships swing at their moorings and take no part in it. This is an actual picture which three years ago no one would have had the temerity to paint, and which, if one had painted it, would have been regarded as some creature of fancy, for the movement of over 7,000,000 tons of ore in an early month does not reconcile itself with the tying up of ships. But it is the unexpected which always happens—and this is particularly true of lake trade, which is beset with so many conditions which cannot be foreseen, and therefore cannot be prevented—not to mention those which are beyond human control, such as the vicissitudes of weather.

There are too many ships on the lakes. We have heard that cry since the early 70's and, like the cry of "wolf" when there was no wolf, have grown accustomed to it; but now for the first time it appears to be true. There are actually too many ships on the lakes for the business offering—and the business offering is the heaviest on record. This situation has burst upon the trade with the suddenness and illumination of a flash of lightning. That there are too many ships on the lakes has been the theory of the timid for the past 30 years; today, it is a condition. Like Othello, the promoter's occupation's gone. It is interesting to inquire into the causes which have led to this surplus of ships. Three things have conspired to bring it about—the promoter, the big ship and the unloading machine. The profits of lake trade have not been inconsiderable in the past and the business has attracted the attention of the promoter—particularly since the practice of bonding the vessel for half its cost was established. It was comparatively easy to promote a company for the building of a bulk freighter, as the dividends ordinarily earned were higher than those paid in such legitimate enterprises as are open to the small investor. There is a kind of surety about the business, too, that is attractive to capital. The great lakes have a trade of their own, and which cannot be taken away from them. The railways cannot take it away. The thousand-mile haul belongs to the ship and always will belong to it. And so the promoter flourished in the land. Since 1904, which year marked the beginning of the big ship era, the promoter may be said to have flourished like the proverbial green bay tree, and a man might even have a ship named after him, providing he took a sufficiently large slice of its stock or, better yet, fed it with business. And so not only the cupidity but the vanity of man was appealed to, passions which are not easily quelled. To read the vessel list is like reading the directory of our leading citizens, all the creation of the past six years—not all, to be sure, the work of the promoter, but a part of them. Well, as remarked, the promoter is now out of a job and will be so for some time. Whatever ships are built in the future will be for those who can use them in their own business—the iron ore producing, steel making companies. As they want ships to meet their requirements, they will build them; but the so-called independent interests, meaning those that have no iron mines or furnaces, but are vessel owners simply, are out of the market for the time being. They already have more vessels than they can profitably employ. One-fifth of the tonnage has been voluntarily retired without making the slightest impression on the trade. In fact, the withdrawal has not been noticed. Cargoes are no more abundant. The vessels in commission are knocking about the harbors awaiting their turn, and are caring for the trade offering with ease. It isn't as though there was a slump in trade, for there is no slump. Whatever may be the state of industry throughout the country in general, the lakes are doing a fine business, the best ever. The only trouble is that there are too many ships with which to do it.

The growth of big ships on the lakes has been swift with a consequent increase in the size of the average cargo carried. Moreover, dispatch has multiplied tonnage, making possible an extra trip or two, and this circumstance, added to the increase in average carrying capacity, makes a mighty big addition to available tonnage. Few people realize what dispatch on these lakes is, and even vessel owners themselves are just awakening to the fact that they are living in new times. The old order changeth

and giveth place to the new. It was in the fall of 1899 that the first cargo of ore was unloaded automatically. This was a cargo of 2,000 tons at Conneaut, the bucket being an experimental one of the Hulett type. Since then, development has been steady, though for several years buckets were still being filled by hand at some docks. During the past three years, however, surprising changes have taken place. While three years ago Conneaut was the only port that could unload a 10,000-ton steamer in a working day of ten hours, it can now be done at practically all of them. It is a common thing for a 10,000-ton steamer to make a round trip in seven days. The big ships spend very little time in port, the batteries of unloading equipment being kept into the highest state of efficiency at all times. Moreover, there is no night. Once the machines start to unload a ship, they do not stop until she is unloaded. The work goes on, day or night, rain or shine, it's all the same. It is this never-ending toil at high pressure on the docks that has increased the potential tonnage of the individual ship and has thus created a surplus of ships on the lakes.

Of course the situation is not serious. It is not a particularly alluring moment for the stockholders whose ship is tied up, but even for him it is not serious. He may skip a dividend, but he cannot lose the principal. The trade is a magnificent one and is steadily growing. The commodities moved are not perishable. They will keep indefinitely, and are certain to increase in value as time goes on. The business will eventually assimilate the ships already built, to which end it will be aided by the natural wasteage of the elements and the natural growth of the country. Ship building and ship owning will continue to be, as they now are, two of the soundest enterprises of the lake country. At present, they have over-reached a bit, that's all.

PIG IRON OUTPUT.

The official statistics of pig iron production during the first six months of this year, given in these columns a week ago, make a partial subdivision into grades, as the steel making grades, Bessemer and low phosphorus, basic and spiegeleisen and ferro-manganese, are all given, and the remainder is practically all foundry iron, although it may be classed as malleable, foundry or forge. It must be remembered that more forge iron goes through the foundry than through the puddling furnace. Prior to the past twelvemonth, the best half year's output was that of the first half of 1907, and we therefore compare the three periods as follows:

	First half, 1907.	Second half, 1909.	First half, 1910.
Bessemer and low phosphorus	7,185,878	6,084,888	6,323,883
Basic	2,671,136	4,952,644	4,953,810
Spiegel and ferro-manganese..	172,675	133,465	129,978
Charcoal iron..	205,796	204,614	219,653
All other	3,242,559	3,397,514	3,385,068
Totals	13,478,044	14,773,125	15,012,392

It will be observed that the production of Bessemer iron suffered a decrease of a million tons from the first half of 1907 to the later periods, although the total output increased one and a half million tons, while this loss, and almost the entire increase, was made in basic pig, which showed a gain of 2,282,000 tons. Foundry grades hardly showed their proportion of the entire increase. The production of spiegeleisen and ferro-manganese showed a great decrease, presumably because prices of imported material have been much lower than in the first half of 1907, when the average price of ferro-manganese was about $70. The increase in Bessemer and low phosphorus iron from the second half of last year to the first half of this year is presumably due to the fact that the whole steel industry ran at a slightly heavier pace in the later half year, while in the earlier half year the Bessemer plants were slower in getting started than the open-hearth.

The production for the year ending June 30, 1910, exceeds by nearly four million tons the production of any calendar year, as will be seen by the following table:

Second half, 1909.....	14,773,125
First half, 1910.....	15,012,392
Total for 12 months.....	29,785,517
Calendar year, 1909.....	25,795,471
Excess over record year.....	3,990,046

Although, as we stated in our issue of June 16, 1910, the production of 30,000,000 tons in twelve consecutive months may not be reached this summer, the furnaces have shown that this is a 30,000,000-ton country.

A DRASTIC MEASURE.

On June 23, only a short time before the adjournment of the last session of congress, Representative Borland, of Missouri, introduced a bill (H. R. 27 140) to establish more thoroughly the present United States standard gage for plate and sheet iron and steel. The gage incorporated in the bill is identical in every respect with the present gage, which was established by the Stone bill, the last act approved by President Harrison, on March 3, 1893. The Stone law merely provided that the gage should be used exclusively "in determining duties and taxes levied by the United States of America on sheet and plate iron and steel," authorized the Secretary of the Treasury to prepare suitable standards, and provided "that in the practical use and application of the standard gage hereby established a variation of two and one-half per cent either way may be allowed."

The Borland bill as introduced in the last session of congress is very rigid. It provides that it shall be unlawful for any one to sell or offer to sell, deliver or offer to deliver, in fulfillment of any contract of sale, to the United States or to any person for its use, or to sell or offer to sell, to transport or deliver for transportation, or offer to transport or deliver for transportation, in interstate commerce, such material by any other gage. Violation is a misdemeanor, punishable by fine up to $500, or imprisonment up to one year, or both. A variation of 2½ per cent is allowed, and the act or omission of any person is put upon the concern employing him as well as upon himself.

The friends of the Borland bill are pushing the matter and it will undoubtedly be brought up in the next session of congress. It can hardly be asked that the bill be passed in its present form, for its provisions are very onerous, but it certainly must be admitted that there are serious abuses

in gage designations in the sheet steel trade, and it is a disgrace that they survive. If these abuses can be removed by a federal enactment, that enactment should be had, but there is always danger of putting an unnecessary burden upon commerce, and for that reason the matter should be thoroughly threshed out in the few months that intervene until the matter is brought before congress again.

Most, but by no means all, of the abuses in the trade arise in cases of material sold by measurement. Thus a "square" of corrugated roofing is 100 square feet. If it is sold as 28-gage when it is 29-gage, less weight than expected is delivered. Abuses of the same character occur with eave trough and conductor pipe, ridge roll, etc. There are some abuses in the other direction, for when material is sold by weight, a heavier gage, worth less per pound, is sometimes substituted.

These abuses can be avoided by the buyer weighing his material. No more skill is required in checking up the seller than the buyer ought to have if he expects to be successful in his business. As a matter of fact, many buyers do not so examine the material they purchase.

A complication arises from the fact that some distributors purposely order material to be furnished light, in order that they may deceive their customers. The mental attitude of the distributor, of course, is that he is "meeting the competition."

It may easily be found that the Borland bill is too drastic as it stands, but it is hard to see why, for instance, the stenciling of a square of 29-gage roofing as 28-gage should not be made a misdemeanor.

A. C. Rosencrantz, president of the Vulcan Plow Works, of Evansville, Ind., has distributed $8,500 in gold among 103 of the 124 workmen in his plant. This is in line with a system of bonuses which he employs, and which he believes results in greater efficiency. The system has been in use four years, the first year resulting in the giving of $2,500. Next year he expects to give $10,000 in bonuses.

AT ONE PLACE

Foundries of Westinghouse Companies Will be Located.

Announcement is made by the Westinghouse Electric & Mfg. Co. that it has purchased 70 acres at Trafford City, Westmoreland county, Pa., adjoining the property owned by the Westinghouse Machine Co., on which a large foundry will be erected, plans for which were announced some time ago. The ground has been turned over to the company by the East Pittsburg Improvement Co., which acts in all real estate matters for the Westinghouse interests, for $250,000.

When the Trafford City plant is completed, the foundries of the Westinghouse Electric & Mfg. Co., at Cleveland, and Northside, Pittsburg, will be centralized at the new location and thus place all foundries of the Westinghouse interests at one place. The foundry of the Westinghouse Machine Co. is located at Trafford City. About 2,500 men will be employed at the new plant.

The Trafford City site has already been connected with the machine and electric company plants by what is known as the Inter-Works railroad, and this is to be the connecting link that will give all the East Pittsburg and Trafford City shops quick communication. The airbrake plant will not be involved in any way with the new operation, as the plant at Wilmerding remains independent and has its own foundry connected with the other portion of the works.

LARGEST DIVIDEND DECLARED.

A regular dividend of 4 per cent and an extra dividend of 4 per cent on the common stock of the American Shipbuilding Co. has been declared by the directors of the company. The dividends are payable 2 per cent (1 per cent regular and 1 per cent extra) on Sept. 1, Dec. 1, March 1 and June 1. Last year 4 per cent was paid. Extra dividends of 2 per cent each were paid on the common stock, Sept. 1, 1906, and Sept. 1, 1907. The declaration just made was the largest ever made on American Shipbuilding Co.'s common stock.

ENAMELED STEEL WARE DUTY.

Merchandise returned by the New York appraiser as "steel light shades enameled with vitreous glasses" was classified for duty at 45 per cent under paragraph 199, tariff act of 1909, the residuary paragraph of the metals schedule. The importers objected to this classification, alleging that the provision paragraph 140, same act, for "table, kitchen, and hospital utensils, or similar hollow ware, of iron or steel, enameled or glazed with vitreous glasses" with 40 per cent duty was more applicable.

On protest before the board of general appraisers, this contention was upheld.

The reason for the ruling was that no effect would be given to the words "or other similar hollow ware" if the paragraph in its application would be limited to table, kitchen, and hospital utensils.

NEW STEEL FREIGHTER WAS LAUNCHED.

The steel lake freighter, William C. Moreland, built for the Jones & Laughlin Steel Co., was launched July 27 at the Lorain, O., yards of the American Shipbuilding Co. It was the largest of the half dozen freighters dropped into the water at these yards this year. It is 600 feet long, 58 feet beam, 32 feet deep and has a carrying capacity of 12,000 tons. The ship was christened by Miss Esther Moreland, daughter of A. M. Moreland, of Pittsburg, and niece of W. C. Moreland, secretary of the Jones & Laughlin Steel Co., after whom the steamer was named. A number of directors and officials of the steel company were present at the launching.

HEAVY RECEIPTS OF SWEDISH IRON ORE.

Very heavy shipments of Swedish ore are now being received by the furnaces in the Schuylkill valley. Several vessels arrived at Port Richmond within the past few days. Much of the ore is going to Emaus, Pa., and the Warwick Iron & Steel Co. and other firms in the valley are getting this mineral. Very little lake ore is now being used by the furnaces in eastern Pennsylvania.

Statistics compiled by the Pittsburg chamber of commerce show that the total tonnage handled in the Pittsburg district during the year 1909 was 158,006,542 tons, as compared with 115,955,403 tons in 1908, and 161,194,-167 tons in 1907, which was the banner year. Of the total tonnage handled in 1909, 145,580,388 tons were handled by the railroads and 12,426,-154 tons were handled on the local rivers.

A DAY AMONG THE IRON ORE OPERATIONS OF THE PORT HENRY DISTRICT

Large Delegation of Iron and Steel Manufacturers Inspect Upper New York Mines — Concentrating Operations Increase — Active Development Work.

Demonstration of what the Port Henry district is accomplishing upon a large and progressive scale in the mining and treatment of the magnetite iron ore deposits of that region, was accorded a representative body of iron and steel manufacturers and guests from the east and other sections at Port Henry and Mineville, N. Y., July 27. As guests of Witherbee, Sherman & Co., Inc., one of the largest operators of the Port Henry regions, the members of the Eastern Pig Iron Association and prominent iron and steel men not affiliated with that organization enjoyed the privilege of thoroughly inspecting the active development work, in all its phases, now being carried forward upon the properties of that company, of the Port Henry Iron Ore Co. and of other mining interests. About 70 persons were numbered in the inspecting party.

By arrangements admirably made and executed, the guests were enabled to spend a full day at the mines and to make their trip under the most pleasant conditions. Both upon the journey and during the stay at Port Henry and Mineville, every convenience for the comfort and entertainment of the party was provided. The train was made up of solid Pullmans, consisting of four sleepers, dining car, "Loretta," the private car of C. M. Schwab, president of the Bethlehem Steel Corporation, and a private car of the officials of the Delaware & Hudson Co. Leaving New York, Tuesday evening, July 26, by way of the New York Central and Delaware & Hudson lines, the party reached its destination early the next morning.

Arriving at Port Henry, the guests were greeted by officials of the company there, and breakfast was served in the dining car. The first point of inspection was the power plant of the company at Port Henry. This was erected in 1907 of monolithic concrete from tailings of the mine separators, in which a mixture of six of tailings to one of concrete was used. The stack, 8 feet inside diameter by 175 feet high, is of reinforced construction. The boiler room contains 1,864-horsepower Babcock & Wilcox boilers, equipped with superheaters, McClave shaking grates and Wing turbine blowers. Anthracite coal is used. The engine room contains two General Electric vertical Curtis turbines generating current at 6,600 volts, 25 cycles. The first unit, 800 kilowatts, was installed in 1907 and the second unit, 1,500 kilowatts, in 1909. The steam is used at 165 pounds pressure and 1,000 degrees superheat. The surface condenser and pumps are the Wheeler type. The cost of the power is $.009 per kilowatt hour, generating 500,000 kilowatt hour per month.

Visit Historic Ground.

At this point, the party separated, one delegation going to the State Park at Crown Point, and the other to the Cheever Iron Ore Co. mines near Port Henry. The State Park at Crown Point is located across Lake Champlain from Port Henry, and is a most historical ground, since it stands as a strategical point commanding the passage through the lake, for the possession of which the French and English fought bitterly during the Colonial days. The land, which was formerly owned by Witherbee, Sherman & Co., was given last winter by that company to the state of New York for a state park. It contains the ruins of Fort St. Fredrick, built by the French in 1731, and the ruins of Fort Amherst, built by the English in 1759. Several millions of dollars were expended by these governments in the construction of these fortifications, which still preserve some vestige of their erstwhile formidableness. The site for the monument of Samuel D.

Ruins of Forts St. Frederic and Amherst at Crown Point, N. Y., Formerly Owned by Iron Ore Interests.

E. Champlain, commemorating the 300th anniversary of his discovery of the lake which bears his name, will be erected on government land adjoining this park.

The mine of the Cheever Iron Ore Co., which was inspected by others of the party, is located along the lake and near the town of Port Henry. These workings were first operated during the revolutionary war, and their total output to date exceeds 3,000,000 tons. From 1853 to 1883, the mine supplied ore for the Bay State furnace at Port Henry and it was then abandoned for a period of 20 years. It was reopened in 1906, and in 1909 was acquired by the Bethlehem Steel Co. and Witherbee, Sherman & Co. It is now furnishing ore to the Bethlehem Steel Co. furnaces at South Bethlehem. The mine is equipped with mill and mining capacity of 400 tons per day, and is operated by electricity furnished by Witherbee, Sherman & Co.

The Cedar Point blast furnace of the Northern Iron Co., at Port Henry, was inspected by the entire party. This furnace is operating on all magnetic ore, principally concentrates. It was built in 1872, and is owned by Witherbee, Sherman & Co., who have leased it to the Northern Iron Co., for a term of years. The furnace is distinguished by the fact that it was the first in the country to install Whitwell hot blast stoves. The stack is 69 feet 3 inches high, the hearth 10 feet 6 inches, the bosh 17 feet, and the stock line 10 feet 6 inches. There has recently been installed at this plant, a General Electric Co. turbo-blowing unit, the second of its kind in operation in this country. This consists of a six-stage centrifugal compressor driven by a 1,500-kilowatt steam turbine.

Inspect Mineville Operations.

Leaving Port Henry after luncheon the party proceeded by special train over the Port Henry, Lake Champlain & Moriah Railroad to Mineville, the center of the most active mining operations of the region. This road was built in 1868, and is owned jointly by the Port Henry Iron Ore Co. and Witherbee, Sherman & Co. The average grade is about 200 feet to the mile, all of which is in favor of the ore traffic. The roadbed is ballasted with ore tailings, and laid with 90-pound rails. Modern steel cars with a carrying capacity of 55 tons each, are being substituted for equipment of the old type. The tonnage handled by the railroad for the six months ending July 1, 1910, was 437,825.

The first mine visited was the Smith mine, located above Mineville, which, though purchased by Witherbee, Sherman & Co., 27 years ago, was not operated until 1905. Its output is now 150 tons per day, and the crude ore runs about 60 per cent in iron and 1 per cent in phosphorus. Electric power is used for hoisting and for two 600 cubic feet compressors. Nearby, is the "21" mine of the Port Henry Iron Ore Co., which for years was worked as an open pit mine, and now shows exposed from the surface, the ore body and the pillars of ore left in the upper working. The mining of this property is now being carried on through a shaft. Ore was first discovered at this location in 1825, and the mine has been worked practically without intermission since 1852. The crude ore runs about 60 per cent iron and from 1.25 to 1.50 per cent phosphorus. A cave-in several years ago threatened seriously to impair the value of the property, but the mine was saved through skillful engineering. The open pit mine of the Port Henry Iron Ore Co. is the outcrop of the same ore body now being worked by Witherbee, Sherman & Co., through the Bonanza and Joker shafts.

The Joker shaft of Witherbee, Sherman & Co. is 800 feet deep, and is equipped with two skips worked in balance. The ore body is from 200 to 300 feet in thickness, and is a continuation of that of the open "21" mine. An electric tramway handles the ore below, and the cars are dumped by an electrically operated tipple into a 1,000-ton bin from which the ore is fed automatically into the shaft skips. The steel head frame, which was built by the Wisconsin Bridge & Iron Co., has a storage capacity of 1,100 tons. By the bins below and above ground the output of the shaft is handled without interruption from temporary break-downs and delays for railroad cars. A Robins conveyor belt takes the ore from the shaft house to the No. 1 separator. The Bonanza shaft is located about 600 feet from the Joker shaft, and is a part of the same ore body. The crude ore from these two shafts runs about 60 per cent in iron and from 1.25 to 1.50 per cent in phosphorus. The Old Bed steam hoisting and compressor plants are located between these two shafts.

Operating by Tunnel.

Recently Witherbee, Sherman & Co. have been actively pushing the development of the Barton Hill property at Mineville. A tunnel has been driven in the hill a distance of 2,300 feet, practically all in ore, in order to attack the old workings of Barton Hill so that the ore and water can be taken out at a lower level. An electric tramming, hoisting and pumping system is being installed, and a separator is to be erected near the entrance to the tunnel. The crude ore from this operation runs about 50 per cent in iron, and 0.04 to 0.06 per cent in phosphorus. The concentrates, it is believed, will then run about 60 per cent in iron and 0.01 per cent in phosphorus. At the present time, the company is running diamond drills in the tunnel and has reached a depth of over 1,600 feet, from which satisfactory borings have been extracted. This depth has been reached by means of a special drilling machine designed by the contractors, and is said to be one of the most creditable performances done with a bit of 1 7-16 inches in diameter. The ore from this mine is of a highly crystalline character which admits of ready concentration, and from all indications, the ore body is an exceedingly large one.

The Harmony mine of Witherbee, Sherman & Co. was visited by the party and shaft "B" inspected. This ore is silicious in character, running as mined 40 to 60 per cent iron and 0.10 to 0.20 per cent phosphorus. The output of Harmony "A" and "B" shafts is shipped to the separators for the purpose of enriching its iron content and quality. The concentrates run about 60 per cent iron and from 0.10 to 0.15 per cent in phosphorus. The Harmony crude ore is passed over cobbing machines and all pure pieces up to 3 inches in size are passed into the concentrates without further crushing. Transmission lines four miles long are brought into step-down transformers 6,600 to 3,300 volts to the Harmony hoisting and compressor plant from the power plant at Port Henry. Lines from the central power plant at Mineville are also brought in here at 3,300 volts. A 300-horsepower induction motor operates a Wellman-Seaver-Morgan hoist of four drums, which runs two skips in the "A" shaft and two in the "B" shaft of the Harmony mine. The compressor installation furnishes air to both the Harmony and Old Bed mines for running the air drills and the small pumps. The installation consists of two two-stage 1,200 cubic foot compressors belted to 3,300 volt 400 horsepower synchronous motors.

Concentrating on Large Scale.

The concentrating operations of Witherbee, Sherman & Co., which are upon a very extensive scale, attracted the interested attention of the visiting iron and steel men. The separation of the ore, which is by the magnetic process, is designed in some cases to increase the iron content to a uniformity and in others, according to the ore qualities of the different mines, is to reduce the phosphorus element, which appears in the form of apatite. The No. 2 mill treats the Old Bed ore from the Joker and Bonanza shafts to reduce the phosphorus. The concentrates here run from 65 to 66 per cent in iron. The mill has a capacity for 100 tons per hour. The No. 1 mill adjoins the No. 2 mill, and treats Harmony ore and some Old Bed and Smith mine ore. Its capacity is 100 tons per hour. About 3,000,000 tons of crude ore have been treated in these two mills since 1902, about one third of which was Harmony ore and two-thirds Old Bed ore. The tailings from these mills run about 10 per cent in phosphorus and 10 per cent in iron, and are sold to western furnaces which use them in the manufacture of some grades of foundry iron. These tailings are also sold in pulverized form as fertilizers.

There has just been completed at Mineville by Witherbee, Sherman & Co., what is probably the largest and most modernly equipped iron ore concentrating plant in this country. This is known as the No. 3 separator and is intended to concentrate the Harmony mine ores direct from the mines, saving switching and leaving the No. 1 and No. 2 mills exclusively to the treatment of the Old Bed ores. The building is of concrete construction with concrete floors and columns and reinforced by old wire rope. In all, 50,000 feet of wire rope was used in the construction. The floors are designed to carry 500 pounds per square foot and they show but slight vibration with the heavy machinery all in peration. The building contains 500,000 cubic feet and was erected at the cost of $.06 per cubic foot, the concrete being manufactured by the company from the tailings of its own separators. In equipment, the new mill has four cobbing and six magnetic separators of the belt type by which the treatment of the ore will be accomplished. These have a capacity of 850 tons of lean ore requiring fine grinding, per day of ten hours. For an ordinary run of ore from the Harmony mine, the capacity wil be 150 tons per hour. The ore passes direct from the shaft to gyratory crushers, is screened and then goes through the cobbing machines, which separate the purer and coarser pieces by magnetic attraction. The grinding operation continues and the ore becoming gradually reduced is finally concentrated by means of the belt machines. The separating machines are built by the company after the designs of S. Norton, the general mine superintendent.

Port Henry's New Shaft.

The Port Henry Iron Ore Co. has recently built and installed a new shaft near the Joker shaft of Witherbee, Sherman & Co., and which is known as the Clonan shaft. This is a three compartment vertical shaft, concrete lined to the ledge. Its depth is 541.3 feet. It has a steel head frame built by the Wisconsin Bridge & Iron Co. with a storage capacity for 600 tons of furnace ore, 100 tons of crushed furnace ore, 100 tons of lump ore, and 300 tons of rock. The power plant has two Delaney return tubular boilers, 150 horsepower at 150 pounds steam pressure. There is storage for 250 tons of coal. The stack is 76 inches in diameter by 90 feet high and was built by the Coatesville Boiler Works, Coatesville, Pa. The hoisting engine is duplex, direct acting, two 25 x 42 inch Corliss engine, operating two drums 7 feet in diameter which carry 1,000 feet of 1⅛-inch plough steel rope on one wind. The drums are driven by steam operated band friction clutches, and the brakes are steam and by hand. The brake is applied automatically in case of overwind, and the throttle is also automatically closed, under such circumstances. The hoist was built by the Sullivan Machinery Co., Chicago, to withstand strains due to boiler pressure of 150 pounds per square inch, and a total load of 13,000 pounds. The rope speed of the hoist is 1,500 feet per minute at 110 pounds pressure. Its capacity is 3,000 tons every 24 hours.

The central power plant of Witherbee, Sherman & Co., at Mineville, which was erected in 1902, contains a Nordburg Corliss engine direct connected to a 750 kilowatt generator at 3,300 volts with a belt connected exciter. An additional 400 horsepower Babcock & Wilcox boiler is now being installed. A 750-kilowatt low pressure turbine is also being added to the equipment to take exhaust steam from the Corliss engine, after which it will pass to an Alberger surface condenser. By this arrangement, the generating capacity of the station is to be increased about 50 per cent with an expected economy of 30 per cent in coal consumption. The turbine is designed to operate under high pressure steam direct from the boilers in case of accident to the Corliss engine. Transmission lines from two water power plants nearby Mineville, of 375 kilowatts each, and whose output is used under contract, are brought in at the general power house at 6,600 volts and stepped down to 3,300 volts.

The office building of the Witherbee, Sherman company at Mineville was a point of interest to the visitors. This was built in 1907 of concrete blocks made of tailings. The first floor is occupied by the general offices and accounting department; the second, by the engineering department. In the latter are shown stick and glass models of the different mine workings, and cabinet specimens of ore. A small separating plant with both drum and belt pipe machines is located in the basement. A monolithic concrete vault, three stories high, occupies the center of the building. Opposite the office is the Witherbee Memorial building, a workingmen's club house which was erected by the heirs of S. H. Witherbee and J. G. Witherbee, two of the original members of the firm of Witherbee, Sherman & Co. The concrete type of buildings is destinctly typical of the town of Mineville and these have been built of cement blocks manufactured from the tailings of the separating plants. During the past four years, he company has built 51 cement block tenements in the town.

Reception is Tendered.

After completing a thorough inspection of the mining operations of Mineville, the visiting party returned to Port Henry by special train. The day's entertainment was fittingly closed by an informal reception given in the evening by F. S. Witherbee, president of Witherbee, Sherman & Co., at his large and beautiful residence in Port Henry, which overlooks Lake Champlain. Mr. Witherbee was assisted in receiving by the members of his family and other officials of the company. As a part of the informal entertainment, R. H. Rice and F. A. Larkin, of the General Electric Co., presented stereopticon views outlining the details and operation of the new turbo-blowing unit which that company is now installing at various blast furnace plants, including that at the plant of the Northern Iron Co., at

Port Henry. Following the reception the return trip to New York was made by special train, which arrived there Thursday morning, July 28.

The Guests.

Those in the party included the following:

C. M. Schwab, president Bethlehem Steel Corporation, South Bethlehem, Pa.
H. S. Snyder, vice president, Bethlehem Steel Corporation, South Bethlehem, Pa.
E. A. S. Clarke, president Lackawanna Steel Co., New York City.
H. E. Andrews, Lackawanna Steel Co., Buffalo, N. Y.
E. S. Atwater, Poughkeepsie Iron Co., Poughkeepsie, N. Y.
John Birkinbine, Philadelphia.
George W. Blanchard, Boonton Iron & Steel Co., Boonton, N. J.
A. E. Borie, New Jersey Zinc Co., New York City.
Horace Boyd, Thomas Iron Co., Easton, Pa.
H. N. Brinsmade, Port Henry Iron Ore Co., New York City.
Robert Bull, New York City.
William P. Burden, Burden Iron Co., Troy, N. Y.
D. F. Bush, Crocker Bros., New York City.
S. H. Chauvenet, Berkshire Iron Works, Sheridan, Pa.
H. G. Dalton, Pickands, Mather & Co., Cleveland.
G. C. Davies, Pilling & Crane, Philadelphia.
Warren Delano, Lackawanna Steel Co., New York City.
J. F. Desmond, B. Nicoll & Co., New York City.
William Dette, Crocker Bros., New York City.
A. I. Findley, *The Iron Age*, New York City.
S. S. Freeman, Carbon Iron & Steel Co., Parryville, Pa.
James Gayley, New York City.
H. A. Hallman, Warwick Iron & Steel Co., Pottstown, Pa.
G. F. D. Hallman, Reading Iron Co., Reading, Pa.
W. W. Hearne, Matthew Addy & Co., Philadelphia.
August Heckscher, New Jersey Zinc Co., New York City.
R. M. Heckscher, Richard Heckscher & Sons Co., Philadelphia.
E. L. Herndon, Eastern Steel Co., Pottsville, Pa.
F. P. Huntley, Gould Coupler Co., New York City.
J. R. Jones, Alan Wood Iron & Steel Co., Philadelphia.
F. A. Larkin, General Electric Co., New York City.
A. H. Lee, Lackawanna Steel Co., Buffalo.
C. H. McCullough, Lackawanna Steel Co., Buffalo.
A. Marshall, Juniata Furnace & Foundry Co., Philadelphia.
J. B. Moss, American Steel & Wire Co., Worcester, Mass.
W. J. Mullin, Delaware & Hudson Co., Albany, N. Y.
Augustus Munson, Wharton Steel Co., Wharton, N. J.
A. W. Powers, Cohoes Rolling Mill, Cohoes, N. Y.
A. D. Paine Jr., New York City.
J. Y. Patten, Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa.
Leonard Peckitt, Empire Steel & Iron Co., Catasauqua, Pa.
C. P. Perin, New York City.
W. B. Perley, United States Steel Corporation, New York City.
J. R. Pilling, Pilling & Crane, Philadelphia.
W. S. Pilling, Pilling & Crane, Philadelphia.
Veryl Preston, president Eastern Steel Co., Pottsville, Pa.
R. H. Rice, General Electric Co., Lynn, Mass.
Thomas Robins Jr., Robins Conveying Belt Co., New York City.
James P. Roe, Glasgow Iron Co., Pottstown, Pa.
J. N. Sherer, Bellefonte Iron Works, Bellefonte, Pa.
R. P. Bowler, Guantanamo Development Co., New York City.
H. B. Cox, Empire Steel & Iron Co., Oxford, N. J.
C. S. Sims, Delaware & Hudson Co., Albany, N. Y.
A. P. Smith, Boonton Iron & Steel Co., Boonton, N. J.
H. P. Spackman, Lukens Iron & Steel Co., Coatsville, Pa.
C. J. Stark, THE IRON TRADE REVIEW, New York City.
J. S. Stillman, Empire Steel & Iron Co., Catasauqua, Pa.
Noah H. Swayne 2nd, Rogers, Brown & Co., Philadelphia.
F. A. Wilmot, president American Tube & Stamping Co., Bridgeport, Conn.
W. L. Wolfe, Lackawanna Iron & Steel Co., Lebanon, Pa.
Howard Wood, Alan Wood Iron & Steel Co., Philadelphia.
Dr. J. McG. Woodbury, General Electric Co., New York City.
Phillip E. Wright, Thomas Iron Co., Philadelphia.
M. L. Seaman, American Bridge Co., Pencoyd, Pa.
W. C. Pearson, D. G. Gautier & Co., New York City.
A. W. Francis.
J. E. Johnson Jr., Republic Iron & Steel Co., Birmingham, Ala.
F. S. Witherbee, Witherbee, Sherman & Co., Port Henry, N. Y.
W. C. Witherbee, Witherbee, Sherman & Co., Port Henry, N. Y.
L. W. Francis, Witherbee, Sherman & Co., New York City.
W. T. Foote, Witherbee, Sherman & Co., Port Henry, N. Y.
J. F. Dery, Witherbee, Sherman & Co., New York City.
F. E. Bachman, Northern Iron Co., Port Henry, N. Y.

BIG DIVIDENDS

Declared by Chalmers Motor Co. of Detroit.

A cash dividend of 30 per cent and a stock dividend of 900 per cent has been declared by the Chalmers Motor Co., of Detroit. The stock dividend means the increase of the capitalization of the company from $300,000 to $3,000,000, an increase of $2,700,000—this amount to be divided among the stockholders pro rata by raising the par value of each $10 share to $100. None of this increase is to go on the market.

In two years the Chalmers company has grown from a plant covering a small area and buying most of its parts to be assembled, to a monster factory in which $1,500,000 has been invested in new buildings and machinery to turn out practically all the parts which go into the Chalmers cars.

Of the future of the business, President Hugh Chalmers commented as follows:

"Since our 1911 models were announced a few weeks ago, we have been in the midst of a rush of business such as we have never before experienced. We have now more orders for cars for immediate shipment than we have ever had before in the history of the company at any one time. We believe we shall have no difficulty in selling all of the cars that we plan to make for 1911.

"Some people think that this will be a slack year in the motor car business. As I have said before, our sales records do not show any evidence of this. We do not agree with those people who say that the motor car business will 'blow up.' There may be a 'blow-off' some time, but not a 'blow-up.' and if this blow-off comes, it will be a healthful thing and in the long run will have a beneficial effect upon the industry as a whole and will work to the interests of the buying public inasmuch as it will mean the elimination of any concerns which have not or are not now giving the greatest possible value that can be given for the prices asked."

AGREEMENTS REACHED.

An agreement was reached in Chicago on July 28 between the Western Bar Iron Association and the Amalgamated Association of Iron, Steel and Tin Workers on a new wage scale for the year ending June 30, 1911. The settlement was made on the same basis as the agreement signed last week by the Amalgamated association and officials of the Republic Iron & Steel Co. The puddlers will receive an advance of 50 cents a ton and employes in the various departments will receive an advance of from 3½ to 7 4-10 per cent.

Members of the Western Bar Iron Association held a meeting in Chicago, July 26. A joint conference wage scale committee followed July 27 and 28, and the new scale was signed.

All the mills of the Republic Iron & Steel Co., except the Toledo plant, resumed operations one week ago Monday. The Western Bar Iron Association mills resumed operations this week.

COAL AND COKE SHIPMENTS ON THE PENNSYLVANIA.

The statement of coal and coke shipments originating along the line of the Pennsylvania Railroad Co., east of Pittsburg and Erie, for the month of June shows; Anthracite, 853,735 tons, an increase of 104,967 tons; bituminous coal, 3,287,415 tons, an increase of 182,633 tons; coke, 1,065,177 tons, an increase of 189,052 tons; total, 5,206,327 tons, an increase of 476,652 tons.

From Jan. 1, 1910, to June 30, the shipments were: Anthracite, 5,767,761 tons, a decrease of 15,029 tons; bituminous coal, 20,218,095 tons, an increase of 2,137,328 tons; coke, 7,270,683 tons, an increase of 2,222,405 tons; total, 33,256,539 tons, an increase of 4,344,704 tons.

The Pennsylvania Railroad Co. has declared the regular quarterly dividend of 1½ per cent, payable Aug. 31.

IN THE MACHINERY FIELD

New York.

Machine Tools Quiet—Auto Builders Over-Buy Needs—Large Crane Order.

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., Aug. 2.

July ended in the machinery market in New York territory under quieter conditions than prevailed earlier in the month, and in which the normal mid-summer dullness of business conditions were apparent. Some of the leading sellers of machine tools drawing their patronage largely from local territory, were enabled to close on some very fair orders during the first half of the month, but there was a considerable reduction of the volume of business entered the second half. With other interests the entire month was dull. Present business is largely in small-lot orders.

Machine tool conditions in general in the country continue to reflect the slowing down of the automobile industry, and while a part of this recession is undoubtedly due to the between-season period, it is apparent that some of the leading builders have overestimated the expansion of their trade in their purchases of equipment. As reported last week, some of the larger automobile manufacturers have held up deliveries upon heavy purchases of tools and are following a policy of retrenchment at the present time, which is understood to be even more extensive than at first believed. Other automobile interests which have followed more conservative lines of development are taking in their new machinery readily and in some cases even urging early deliveries. Some of these companies are rather welcoming the slackened demand in order to be able to give more thoughtful attention to the future expansion of their business, particularly along the lines of commercial truck construction. The result of the present condition of some of the automobile builders will undoubtedly be reflected in the buying of machinery and equipment, for next season's requirements, along more conservative lines than have prevailed in the past.

The railroads are by no means wanting in the placing of some large contracts for equipment, but these are mainly against projects which are in the well-developed state and there is more or less caution in starting new propositions. One of the largest orders for electric traveling cranes that has been placed in the country for a number of months and amounting to probably $100,000 was closed last week by the Lake Shore & Michigan Southern railroad for its Elkhart shops. The order covered 15 cranes and was placed with Manning, Maxwell & Moore. The New York Central & Hudson River railroad continues to distribute orders on its list for West Albany, and it is stated with confidence that the list of the Delaware, Lackawanna & Western Railroad for its Scranton, Pa., shops, which has been overhanging the market for months, is upon the verge of closing. Awards are expected to be announced this week.

Considerable business in cranes is current. The American Sheet & Tin Plate Co. has made some awards for its new Gary, Ind., plant, but is proceeding rather slowly with the remaining crane requirements. The General Electric Co. has not yet awarded the half dozen cranes for the foundry of its new plant at Erie, Pa., and the American Locomotive Co. is still out for a number of jib cranes for Dunkirk, N. Y. Piping equipment companies report a good condition of trade which is coming principally from iron and steel works extensions and coal mine improvements now approaching the completed stage. The demand for railway supplies is restricted, which is attributable to the cautious buying now being followed by these interests. There is a varying degree of irregularity about other lines of machinery and equipment.

The Lake Shore crane order referred to above consists of two 150 ton, three 40 ton, nine 10 ton and one 5 ton electric travelers. The cranes will all be of the Shaw type, manufactured by the Shaw Electric Crane Co., Muskegon, Mich.

The C. W. Kelsey Mfg. Co., recently incorporated in New York with a capital of $250,000, has acquired a plant in Hartford, Conn., which it will equip for the manufacture of a small motor vehicle. C. W. Kelsey, of Hartford, is president.

Plans for the new plant which the Tabor Mfg. Co., Philadelphia, will erect near the Westmoreland station of the Chestnut Hill branch of the Pennsylvania railroad, near Philadelphia, are now being prepared by Dodge & Day, engineers, 608 Chestnut street, Philadelphia. The new plant will be devoted to the manufacture of the Tabor Mfg. Co.'s line of foundry equipment.

I. M. Ludington's Sons, Inc., Rochester, N. Y., have been awarded by the state superintendent of the public works, barge canal contract No. 62, providing for the construction of over 14 miles of canal in Orleans county, New York. The bid at which the work was secured, was $2,347,833. The new barge canal work in New York is requiring the purchase of much contractors' equipment.

The Hyatt Roller Bearing Co., Harrison, N. J., is building a new plant adjoining its present works. This company has been enjoying a heavy demand for its products and has only recently completed the material enlargement of its present plant.

The Bridgeport Forge Co., Bridgeport, Conn., is rebuilding its plant, which was damaged by fire last October. The company has under construction, a forge shop 57 x 147 feet, to be equipped with Pawling & Harnischfeger electrical traveling cranes, and a machine shop 57 x 160 feet. This shop will also be equipped with electric traveling cranes, and all the tools will be motor driven. The company is now under a new management, the executive organization consisting of Charles F. Bliss, president; C. S. Linsey, secretary and treasurer, and Thomas Dunlap, sales manager.

A. F. Miselback & Bros., Newark, N. J., manufacturers of gears, reels, and other lighter machine products, have recently bought considerable equipment and may need some additional machinery for a new plant just erected. This company has purchased a considerable number of tools, including millers, lathes, etc.

The Bayonne Castings Co., West Eighth street, Bayonne, N. J., is buying some equipment for its plant. This company makes a specialty of alloy castings.

The J. W. Lathrop Co., of Mystic, Conn., manufacturer of gas engines, will erect an addition to its plant in the near future.

A die casting foundry is to be built at Mt. Vernon, N. Y., by C. J. Moberg.

A hotel to cost about $3,000,000 for the land and building, will be erected on the east side of Greenwich street, between Cedar and Liberty streets, New York. The building will be sixteen stories in height and will occupy an entire block.

An 11-story, basement and sub-basement building will be erected at a cost of about $500,000 on the north side of Fiftieth street for the New York Polyclinic hospital and school. There will be wards, operating rooms, X-ray rooms, laboratories and a laundry. Thos. Rowe, 40 West Forty-second street, is the architect.

B. D. Powleston, 220 Broadway, New York, is in the market for an engine lathe 36 inches by 20 feet.

Pittsburg.

July Business Shows Increase Over Last Year, But Considerable Construction Work is Held Up.

Office of THE IRON TRADE REVIEW,
510 Park Building, Aug. 2.

The local machinery trade continues to make a favorable showing for this season of the year and, while no exceptionally large awards were made during the week, the aggregate business booked exceeds that of the corresponding period of 1909. Investigation shows that in a few instances machinery makers have been advised to hold up, indefinitely, orders placed some time ago but no cancellations are noted. The trade has been advised that work will not start until late in the fall on some of the proposed new plants and extensions, on which bids for the necessary machinery and equipment were invited early this month. It is stated that actual construction on the proposed new steel plant to

be built by the Whitaker-Glessner Co., across the river from Wheeling, will not be started until October or November.

There has been no important buying on the part of the railroads, although a number of the lines have placed small orders for machinery and tools for their various shops. Perhaps the most encouraging statement that has been made for some time, in connection with the attitude of the railroads, is the announcement that a number of the larger systems are now making preparations for the heavy repair work at the different shops during the coming fall and winter. Orders have been issued from general headquarters to have all locomotives and cars in the best possible condition for the heavy winter traffic. This means that repair shops will be put on full time, and that the railroads will be obliged to place orders for machinery and tools which have been held up for some time.

During the last week the Westinghouse Electric & Mfg. Co. shipped six powerful electric locomotives for the Pennsylvania terminal at New York and others are to be forwarded shortly from the East Pittsburg works. All the Westinghouse plants are working full time and the indications are that July will show a new high record in business booked, and also in production, as compared with that of recent summers.

Bids have been submitted on a new steam-driven air compressor with a capacity of 500 cubic feet of air per minute at 80 pounds pressure, to be installed at the Avonmore, Pa., works of the Keystone Steel Casting Co.

The McKeesport Tin Plate Co., McKeesport, Pa., has placed a contract with the Atlas Car & Mfg. Co., Cleveland, O., through its Pittsburg office, for 135 steel cars to be used in handling plate in the company's tinning and hot mill buildings.

The new plant of the Baldwin Forging & Tool Co., to be built at Parkersburg, W. Va., will contain 100,000 square feet of floor space. The main structure will be 60 x 860 feet; steel shed 50 x 100 feet, and two warehouses 50 x 200 feet each. The new machinery to be installed will provide for a daily output of 500 dozen shovels.

Plans are being prepared for a new steel tipple, powerhouse, and other buildings to be erected at Stewartsville, O., near Bellaire, O., by the Purseglove Coal Co., which recently bought 1,000 acres of Pittsburg No. 8 seam coal. Fifty miners' houses will be erected and the total cost of machinery and buildings will be approximately $250,000.

The Wabash Railroad Co. has inquiries out for several plate machines and a number of miscellaneous tools. The Wheeling & Lake Erie has closed for most of the machinery and tools for the new repair shops at Brewster, O. The Pennsylvania Lines West of Pittsburg during the past two weeks purchased additional tools and supplies for the shops at Conway and other points on the Ft. Wayne system.

Bids have been invited for the construction of the proposed new Johnstown & Altoona electric line from South Fork, Pa., through Portage, Cresson and Gallitzin to Altoona, a distance of 30 miles. There will be 12 bridges along the new road, and the proposed improvements include a large power house. G. U. G. Holman, of Johnstown, Pa., is general manager.

The Riter-Conley Mfg. Co., Pittsburg, recently received contracts for new work aggregating $1,000,000. The work includes the re-construction of the Emporium Iron Co.'s blast furnace at Emporium, Pa., re-construction of Isabella furnace No. 2 of the Carnegie Steel Co.; three large oil tanks for the Atlantic Refining Co., Pittsburg; gas holder with a capacity of 3,000,000 cubic feet for the St. Paul Gas Light Co., St. Paul, Minn.; 400-ton metal mixer for the Republic Iron & Steel Co., at Youngstown, O.

Demand for castings is heavy and some large awards have been made to the plants in this section. The Wheeling Mold & Foundry Co., Wheeling, W. Va., which recently received a sub-contract from the McClintic-Marshall Construction Co., Pittsburg, for castings, aggregating $1,000,000, to be used in the Panama canal gate work, has also received a large contract for castings in connection with the new mills to be built at Gary, Ind., by the American Sheet & Tin Plate Co.

C. S. Holmes, of the North American Rubber Co., Boston, and the Royal Rubber Co., Canada, announces that plans are being considered for a new plant in the Pittsburg district or at Akron, O.

The Pittsburg & Lake Erie Railroad Co. is said to be preparing plans for a new freight yard and depot on the site of the Cooper gear works, at Struthers, O. The Struthers plant is to be dismantled, the company having built a modern plant at St. Louis.

Albert Waycott, Cleveland, president of the Damascus Brake Beam Co., of Sharon, Pa., is quoted as saying that it has not been decided whether the plant formerly located at Sharon will be rebuilt or whether the company will locate in the Cleveland district. The Sharon plant was destroyed by fire two or three weeks ago.

The Pittsburg Construction Co., Pittsburg, has been awarded a contract for the erection of a brick and steel glass plant addition for the United States Glass Co., at Glassport, Pa.

Work has been started on a $50,000 one-story brick factory being built for the Corliss Carbon Co., at Bradford, Pa.

E. R. Schurtz, of Alamagorda, N. M., who has been granted a franchise to lay pipe and install a gas plant in Taylor, N. M., is now in Pittsburg selecting machinery for this plant, which he expects to have in operation within three months.

Bids will be received until Sept. 5 by E. Felix Lipscomb, county supervisor, Gaffney, S. C., for repairs to the 3-span iron bridge across the Broad river in Cherokee county, S. C. Also for rebuilding the approaches to the same bridge.

Milwaukee.

July Closes Quiet in Machinery Circles —No Developments of Note Reported.

Aug. 2.

The Dahlman Construction Co., of Milwaukee, has been awarded the general contract for the erection of the $400,000 foundry addition for the International Harvester Co. in this city. It is planning to sub-let a large part of the work and will receive bids in about a week.

At a recent meeting of the special Milwaukee city council committee, appointed to report upon the feasibility and advisability of establishing a municipal repair shop, it was decided to recommend an institution of much broader scope than was at first planned. The committee favors combining all of the repair shops of the city, including that of the fire department and having at the plant a foundry and carpenter shop.

Plans are being considered by the Harvey Spring Co., of Racine, Wis., for the erection of another addition to its factory building.

The city of La Crosse, Wis., is contemplating the erection of a new city water pumping station to cost $251,000. Water is to be taken from the Mississippi river and run through a sedimentation basin.

Rapid progress is being made in the erection of the new plant of the Steel Corporation near Superior, Wis. The large power plant has been completed and a portion of the equipment, enough to operate the machinery needed at present, is in place. Excavations for the large machine shop have been commenced and the building, which will be of reinforced concrete construction, will be well under way in a short time.

Work on the new plant of the Storle Valve Co., at Green Bay, Wis., is progressing rapidly and it is expected that the structure will be ready for occupancy by September. The machinery used in the old plant at Kewaunee, Wis., will be disposed of and new equipment will be installed throughout the new plant.

The F. Blocki Manufacturing Co., of Sheboygan, Wis., maker of farm implements, has purchased the Schreier block on North Ninth street and will occupy it as a factory and salesroom.

The Gurney Refrigerator Co., of Fond du Lac, Wis., is building an addition to its plant to be used as an enameling department.

The Beloit Iron Works, of Beloit, Wis., is building a large straw board mill for a plant at Alton, Ill. The mill will have fifty driers 140 inches wide and will have a capacity of 75 tons of strawboard daily.

In addition to the large tire factory which is being erected at Racine, Wis., by the Kelly-Racine Rubber Co., the company will erect a large power house 50 by 150 feet. All of the machinery in the factory will be motor driven.

Bids will be received by James Wil-

son, secretary of the Forest Products Laboratory, Madison, Wis., until Aug. 12, for furnishing and installing on the forest service foundation electric equipment for driving a 500-horsepower ground wood pulp mill in the Forest Service Ground-wood Laboratory.

Chicago.

Dealers Busy With Old Orders, But No New Business Develops—Feeling of Optimism Prevails, However.

Office of THE IRON TRADE REVIEW, 1328 Monadnock Block, Aug. 2.

The midsummer quietness which has fallen on the machinery business applies more particularly to the booking of new business, as the shipment on orders during last month was quite heavy, but it reflected the activity in orders taken during May and June, rather than business closed during July. The month which has just opened will have to develop some quick-delivery orders or the machinery business from every standpoint, including the shipping department, will be very dull. It is anticipated, however, that September, which is usually looked upon as the beginning of Fall, will see inaugurated a very much better condition of things than existed during July, and possibly will exist in the present month. Machinery dealers are very hopeful that the closing months of 1910 will hold in store for them a large volume of business. With the Rock Island and the Northwestern Railway lists removed from discussion by the placing of orders covering a portion at least of the original number of machine tools, and with the interest in the Pennsylvania list shifted slightly to Pittsburg, the one feature of greatest interest to local machinery agents and dealers is the list of the Chicago, Burlington & Quincy for its shops at Havelock, Neb. The closing on this machinery has been deferred from time to time but in some quarters a decision in the matter is expected very shortly.

The evolution in the machinery district by which Canal street gradually is becoming eliminated as a home of machinery houses, continues, and during the past few days a number of houses have removed from that thoroughfare to Jefferson street, which is two blocks west of Canal. The three important houses which still remain on Canal street are, Manning, Maxwell & Moore; Hill, Clarke & Co.; and the O. L. Packard Machinery Co.

Among the Chicago agencies which have found new quarters on Jefferson street is the Norton Co., manufacturer of abrasive wheels, which has located at No. 11 Jefferson street.

The Chicago branch of the L. S. Starrett Co., of Athol, Mass., has removed to 17 North Jefferson street.

The Chicago office and warerooms of the Cleveland Twist Drill Co. have been removed to 9 North Jefferson street, a new building with brick front and a counterpart of the store occupied by the Norton Co., which it adjoins.

The Marshall & Huschart Machinery Co. has located at 17 South Jefferson street, where it is occupying a three-story brick building, the front of the first and second stories of which is almost entirely of glass.

The Machinists Supply Co. has located in a new three-story brick building at 19 North Jefferson street.

The Koehring Machine Co., of Milwaukee, has increased its capital stock from $50,000 to $100,000. The increase will be used to extend the company's business and erect new buildings.

The Sheboygan Light, Power & Railway Co. has let contracts for new buildings and machinery costing in the aggregate $100,000. The machinery includes a new 1,500-horsepower steam turbine which will be used as an adjunct to the 2,500-horsepower turbine now running in the company's plant.

The Bissell Carpet Sweeper Co., Grand Rapids, Mich., will build an addition to its factory to cost $18,000.

The Ross Gear & Tool Co., of Lafayette, Ind., has increased its capital stock from $50,000 to $100,000. It is understood that the company contemplates the erection of a new factory.

It is announced that Jos. Cody & Sons, of Peoria, manufacturers of boilers, tanks, etc., will remove that portion of their business to Bradford, Ill., where they have leased the plant of the Bradford Car & Mfg. Co.

The Bevier Gas Engine Co., which was recently organized at Kalamazoo, Mich., has filed articles of incorporation. The capital stock is $50,000 and the incorporators are, D. A. Shepardson, O. Gumbinsky, and others.

Work will be commenced in the near future on the new machine and forge shop at Ottawa, Ill., for the Chicago, Ottawa & Peoria Railway.

Bids will shortly be asked by the city of Springfield, Ill., for a pumping engine of 12,000,000 gallons daily capacity, for the municipal water works system.

Marshall Field & Co. are contemplating the erection of a twelve story warehouse building on a plot of land 120 x 100 feet at the corner of Fifth avenue and Polk street. D. H. Burnham & Co. are the architects.

Cleveland.

Little Business Closed Last Week, But No Anxiety Felt as to the Future.

Office of THE IRON TRADE REVIEW, Penton Bldg., Chestnut and E. 12th, Aug. 2.

Almost without exception the machinery dealers of Cleveland report little business as having been closed last week. The market generally is unsettled and the demand for tools is mostly from outside points and in single tool lots. Although few of the local dealers have been hit by the holding up of orders for the automobile manufacturers in Detroit, they are all of them of the opinion that the situation in connection with the shutting-down of the automobile plants is going to be felt by them. There is a demand for second hand tools, mostly lathes and milling machines, but inquiries for new tools are very few and large orders are absolutely lacking.

The Westinghouse Electric & Mfg. Co. reports that it is very busy on small work but that no orders of any magnitude are being closed, except one with the Cleveland Railway Co. for the complete equipment for 20 cars. It anticipates that business will be a little quiet from now on until the beginning of September, but thinks that there need be no anxiety felt as to a good fall business. The Machine Co. is well supplied with small orders and reports a fair number of inquiries.

An automatic electric hoist is to be installed at furnace No. 6 of the American Steel & Wire Co., at Cleveland.

Hill, Clarke & Co. report conditions in the city as quiet, the demand mostly being for lathes and milling machines. They do not look for much increase in business before September.

The W. M. Pattison Supply Co. reports business as being fair in new tools, with a good demand for second-hand equipment, mostly from outside points. Amongst new tools sold last week were ten lathes, three of which went to one concern, the others all being on individual orders. The company is anticipating a good fall business and says that it has no fear whatever for the future.

The McKenna Co., dealers in contractors' machinery, reports business on the whole as quiet but looks for a renewal of activity about Sept. 1. It received an order last week from the Great Lakes Engineering Co., of Detroit, for an industrial railway, dump cars and hoisting engine, to be used in connection with the new dock the company is now building at Ashtabula.

The county commissioners, Cuyahoga county, have rejected all bids received for a power plant and equipment for the new court house on account of the prices named being too high. The commissioners are asking bids for the supply of light, heat and power by contract.

The C. & G. Cooper Co., Mt. Vernon, O., has received an order from the Gleason Works, Rochester, N. Y., for a 375-horsepower simple Corliss engine to be installed in the new power house at the Gleason works, to which extensive additions are now being made.

The Erie county commissioners have rejected all bids for the construction of the proposed $60,000 lift bridge over the Huron river at Huron, on account of their not coming within the estimates of the cost based on plans prepared by the Scherzer Lift Bridge Co., of Chicago. Bids will be readvertized for in a few weeks.

The Erner & Hopkins Co., Columbus, O., are going into the manufacture of engines and generators.

The Taylor Steel Co., Canton, O., is to erect a new plant for the manufacture of crucible steel forgings.

John P. Owens and A. S. Cheney, of Marion, O., are organizing a company to establish a plant for the manufacture of steam shovels, dredges,

etc. A site for the plant has been secured and construction work will soon be started.

The Cleveland Hardware Co. will install considerable new equipment, including shapers, lathes, planer, radial drill, steam hammer, etc.

A new forge shop is being built by the American Shipbuilding Co., at Lorain, O.

A new power plant is to be constructed at Akron at a cost of $2,000,000 by the Northern Ohio Traction & Light Co. Chas. Currie is general manager.

The contract for the construction of the line between Alliance and Akron for the Alliance & Akron Short Line Railway Co. has been let to A. Mayo & Co., Ashtabula, O. L. C. Marble, Schofield building, Cleveland, is the chief engineer.

The Cleveland & Akron Bag Co. has purchased six acres of land at Goshen, Ind., and will erect a complete plant for the manufacture of burlap, cotton and paper bags. It will also erect a bleachery for finishing its cotton goods. The general offices will be located in Chicago.

Boston.

Big Cotton Mill Combine Interests Textile Machinery Dealers.—General Conditions Remain Quiet.

Aug. 2.

News of the incorporation in Albany, N. Y., of the International Cotton Mills Corporation for $20,000,000 backed by prominent New England and New York cotton mills men to control 22 mills in New England, the South and Canada came at a time when cotton mills throughout New England are shutting down owing to lack of business and when textile machinery men are wondering where their next contracts are coming from. Only this week a large cotton machinery shop in Taunton, Mass., closed its doors for want of business.

Myron C. Taylor, the president of the new corporation, said: "Extensions and improvements in the physical properties will be made and while all the details have not been worked out, they will include betterments in the eastern mills, including the Stark mills (Manchester, N. H.), the Maryland mills and also the mills further south."

This is taken as evidence that considerable machinery will be called for, but it is also pointed out as significant that Redman P. Snelling, treasurer, and Frank J. Hale, manager of the Sace-Pettee Machine Co., of Newton Upper Falls, Mass., manufacturers of cotton textile machinery, are among the promoters of the concern.

Carding, spinning and weaving machinery is called for by the Wyandotte Worsted Co., of Waterville, Me., for an addition to its plant now being built.

The machinery of the Newport Mfg. Co., South Baptist street, Newport, R. I., was recently sold by auction.

Don W. Felch of Keene, N. H., and Frank W. Pier of Rawsenville, Vt., have signed partnership papers to operate a chair factory in Brattleboro, Vt. Machinery will be moved from a plant owned by Mr. Felch in Keene and additional equipment will be installed.

The Potter & Johnson Co., of Pawtucket, R. I., manufacturer of machinery, has awarded a contract for an addition to its plant for the manufacture of cotton textile machinery, to the Benjamin Smith Co.

The town of Southbridge, Mass., will shortly be in the market for a portable stone crushing plant. The selectmen, of whom Alexis Boyer, Jr., is chairman, expect to pay from $1,800 to $2,000 for it.

A two-story addition 150 x 75 feet will be built by the Morton E. Converse & Son Co., manufacturer of toys in Winchendon, Mass. Large orders of special machinery will be added. Mr. Converse said: "We expect to increase our business $100,000 before the end of the year over last year's business."

The A. H. Berry Shoe Co., Portland, Me., will build a new three-story brick and steel factory 150 x 50 feet.

Henry C. Richardson, general manager of the Webster Composite Felt Boot & Shoe Co., of Webster, Mass., capitalized at $200,000, is arranging for the installation of machinery and a boiler, preparatory to starting operations some time in September. A factory has been leased in Webster.

The Crompton & Knowles Loom Co. will close its plant from Aug. 4 to Aug. 15, during which time repairs will be made to the equipment.

A new melting furnace is to be installed by A. Hanky & Co., manufacturers of knives, Rochdale, Mass.

H. P. Gifford, president of the Salem Water Board, Salem, Mass., is asking bids on two 78-inch boilers for the Salem municipal pumping station.

The Franklin Needle Co., Franklin, N. H., will erect a new power plant in the near future.

The Woburn Machine Co., Woburn, Mass., will make extensive additions to its plant in the near future.

An addition to the municipal gas plant at Westfield, Mass., is to be erected at a cost of $15,000.

Cincinnati.

Lack of Business is Noticeable but Dealers are Sanguine as to the Future.

Office of THE IRON TRADE REVIEW,
Room 11, Blymyer Bldg., Aug. 2.

The usual dullness incident to the season is being experienced by the machine tool trade in general and a number of the shops show indications of relaxation. The records for July show it to have been an average month so far as output is concerned, yet it was not so productive of new trade as its predecessor. The vacation period is now being taken advantage of by a number of manufacturers and the plants as a rule are moving on practically a routine basis. The general feeling, however, is rather optimistic as regards the future and the following month or two are expected to develop a radical change for the better. Several fairly good inquiries are said to have been received from one or two of the large trunk lines, but just what these will develop cannot now be stated with any degree of accuracy. Some buying, however, in a small way has been done, confined principally to consignments of tools for early requirements and in small lots. Quite a number of the plants that manufacture specialties exclusively have been seriously handicapped for sufficient floor space satisfactorily to handle their product. The major portion that are now facing these conditions have made provision for future requirements and are looking forward to the time when they may remove to more spacious quarters that are already in course of completion. The situation as regards the jobbing foundries is somewhat spotted, some being busy and others reporting demand more quiet.

The National Association of Stationary Engineers held a meeting at Engineers' Hall on Thursday evening, and made all arrangements for attending the convention to be held at Rochester, N. Y., Sept. 12. About 60 members will leave this city on Sept. 10 going direct to Detroit where they will be entertained by Detroit Council No. 1, thence by boat to Buffalo. This delegation will make strenuous efforts to secure the convention of 1911 for Cincinnati.

The John B. Morris Foundry Co.'s new addition is progressing in a satisfactory manner and will be ready for occupancy before many weeks. Trade is said to be fair, some slight increase being manifest in the tool line.

The Kern Machine Tool Co., Spring Grove avenue, has increased its capital stock from $50,000 to $100,000. It is said that this will be utilized in developing the plant with the addition of new machinery and other requirements.

The Cincinnati Iron & Steel Co. reports receiving a number of inquiries from all over the country for various machine tools, particularly its 14-inch lathes. Orders have recently been entered for these lathes from Los Angeles, Cal., and Denver, Colo. Four or five lathes and an 18-inch shaper have been sold to Louisville concerns. Cincinnati orders this week include a large power brake to Peck, Anderson & Peck, a lathe to the Toledo Electric Welder Co., and a drill to Kaps-Brehm Co. An order has also been booked from the Darbyshire-Harvie Iron & Machine Co., of El Paso, Tex., for one of its hand power cranes.

The Dreses Machine Tool Co. is said to be receiving a fair proportion of trade now offering, but new work is not pressing at this time. The main plant of the Victor Safe & Lock Co. that is now being erected at Norwood, O., will be 102 x 560 feet, and will be model in every respect. Work on the superstructure is now well under way and the company hopes to be well settled in its new quarters by the first of the year. The machine shop will be 120 x 180 feet, all of brick and steel construction. There will be eight buildings in the plant,

occupied by the various departments, and some additional machinery will be required.

The Ohio Pattern Works, of Cincinnati, O., is planning an addition to its brass foundry.

Louisville.

Few Orders Are Being Placed But Inquiries Are Good.—Power Development a Feature of the Market.

Aug. 2.

The demand for machinery remains rather quiet although manufacturers and sales agents report that there are a number of contracts in the market and that inquiries have been encouraging. The fact that this is vacation time and that few buyers are hastening purchases is given as the main reason for the relatively small amount of sales. Contractors' equipment remains a good factor, while the purchases of boilers and similar equipment indicate that power extensions are being built freely.

The American Car & Foundry Co. is not only running its Jeffersonville plant to its capacity, but is also doing some night work. It is turning out some steel passenger coaches of a new design for the Chicago, Milwaukee & Puget Sound Railway.

The Continental Saw, Car & Equipment Co. has recently installed bar-cutting and bolt-making machinery made by the Acme Machine Co., of Cleveland. The company has named James C. Campbell & Co., Chicago, as western sales agents for its dump car.

The Mengel Box Co., Louisville, is building an addition to its factory at Hickman, Ky., and will require woodworking machinery.

Manufacturers of quarry machinery are interested in the new operations which are planned for the Bowling Green district. The Slim Island Quarry Co. is one of those recently organized, and another is in process of formation.

The Puritan Cordage Mills has doubled its capital stock, which is now fixed at $150,000. It will increase its capacity, and it is understood will buy considerable additional machinery.

J. A. McLeay, of Atlanta, whose purchase of the Licking River Railway was referred to recently, will purchase five standard gage locomotives and 75 standard gage freight cars in addition to a steam shovel.

The Elmendorf Farm, located near Lexington, Ky., will install a cold storage plant.

Mowbray & Robinson, Cincinnati, have purchased a lumber tract in Breathitt county, Ky., and will install a bandmill.

The American Snuff Co., New York, is building a $48,000 addition to its plant at Clarksville, Tenn., and will require additional machinery.

The Mutual Wheel Co., of Moline, Ill., is to build an additional plant at Paducah, Ky., according to reports received here, and will require boilers and other machinery.

F. C. Dickson, of the Kentucky Public Elevator Co., Louisville, is in the market for fruit evaporating machinery.

State Mine Inspector Norwood is purchasing six sets of apparatus to be used in mine rescue work in Kentucky.

The Cumberland Mining Co. has established headquarters at Glasgow and is preparing to buy machinery with which to operate its coal and lead properties in southern Kentucky. P. M. Barwald is manager.

The Central Kentucky Phosphate Co. has been organized at Lexington with $100,000 capital stock for the purpose of developing southern phosphate fields. The company will require a considerable amount of equipment. Lexington will be the company's headquarters.

John Smith, of Owenton, is planning the construction of a light and power plant in that city for the purpose of lighting the town and supplying power to a proposed traction line between Owenton and Covington.

T. J. Asher & Sons, of Wasioto, Ky., will install a central electric station for the purpose of generating electric power with which to operate several coal mines now being opened.

M. J. Moss and White L. Moss, of Pineville, have purchased coal lands on the Wasioto & Black Mountain Railroad and will build a considerable number of coke ovens.

George W. Killebrew, of Mt. Pleasant, Tenn., is taking options on lands in Woodford county, with the intention of opening phosphate mines should they prove workable.

The establishment of a $25,000 fertilizer factory at Owensboro is being projected.

The Louisville & Nashville has, it is reported, purchased 550 tons of bridge steel, dividing the order between the Louisville Bridge & Iron Co., and the Virginia Bridge Co., of Roanoke, W. Va.

The Muir Kirk Iron Co., of Muir Kirk, Md., has named Hickman, Williams & Co., at sales agents for its charcoal iron for the entire United States, with the exception of Maryland.

The National Foundry & Machine Co., Louisville, has been awarded the contract for the structural iron in the addition to the St. Mary and Elizabeth's hospital in this city.

Washington.

Few Developments of Interest to Machinery Trade Noted—Several Opportunities for Foreign Trade Reported.

Office of THE IRON TRADE REVIEW,
Post Building, Aug. 2.

There were no important developments in Washington machinery circles last week and the majority of the lists published by the government were for iron and steel and other metals rather than machinery. The Isthmian Canal Commission did not put out any list of note with the exception of Circular 598. Several reports were received from consular officers relative to opportunities for foreign trade, but the week on the whole produced little of interest.

R. V. LaDow will receive bids until Aug. 17 for furnishing and delivering at the United States penitentiary at Atlanta, Ga., conduit outlet boxes, etc., for electric light, telephone and clock outlets for the hospital building. He will also receive bids until Aug. 19 for furnishing and delivering at the United States penitentiary at Leavenworth, Kas., conduit outlet boxes, etc., for electric light, telephone and clock outlets for the hospital building.

F. H. Newell, director of the United States Reclamation Service, Washington, will receive bids until Aug. 12 for furnishing approximately 5,224 feet of 26-inch and 36-inch iron pipe for siphons on the Uncomphagre Valley project, Col.

Lieut. A. S. Sneed, constructing quartermaster, Ft. George Wright, Washington, will receive bids until Aug. 22 for sinking one 10-inch tubular well at that post. Machinery, work and material to be furnished by the contractor.

A. F. McLean, assistant to the quartermaster, Ft. Riley, Kas., will receive bids until Aug. 10 under proposal 5 for furnishing miscellaneous pipe and fittings, plumbers' supplies, etc. He will also receive bids until Aug. 9 under proposal 4 for furnishing one Armstrong hand machine, 48 tap plugs, 230 boiler tubes, 12 grate rests, 12 arch liners, 9 beveled plates, 12 coal grates, 72 drilled rivets, 72 cotter pins, 18 radiator valves, 36 air valves, 3 vertical tanks, two Tobasco heaters and other supplies.

Capt. F. C. Boggs, general purchasing officer Isthmian Canal Commission, will receive bids until Aug. 19 for furnishing the following material under canal circular 598; swivel pipes, universal couplings, coupling rings and other steel castings, 50 cast steel chairs, 300 link bushings, sheet steel, 16 bars of angle steel, 4 bars of steel angles and one steel channel bar, round and square cold rolled steel, soft steel billets, merchant bar iron, soft steel, iron, stay bolts, 250 condenser tubes, 3 pieces of standard cast iron pipe 24-inch, one 24-inch sluice gate, one 24-inch double disc valve, two check valves, 4 pumps.

The naval department will receive bids under schedule 2732 until Aug. 16 for delivery at Mare Island Navy Yard of 130 tons of general foundry pig iron, analysis to be as follows: Silicon 2.75, sulphur 0.02 maximum, total carbon 3.80 minimum, manganese 1.00 and phosphorus 0.90 maximum.

Reports have been received from several American consuls regarding opportunities for American trade in the countries in which they reside. Details of these opportunites and information concerning them can be obtained on application to the Bureau of Manufactures by quoting the reference number appended to the report in which the applicant for information is interested.

An American consul in South Africa states that an order is shortly to be placed by a local company for a milling machine and lathe for all-round

work in a machine shop. Ref. No. 5216.

An American consul in Australasia states that he has received a letter from a local firm which desires agencies for different American lines of agricultural machinery, engines, hardware, etc. Ref. No. 5221.

An American consul states that an Indian firm is about to open a factory for the manufacture of soap from copra and suggests that manufacturers of soap-making machinery get in touch with the parties in question. Ref. No. 5223.

An American consul in Canada reports that an American company will erect a lead smelter on property which it has purchased in his district. Plans have been made for the smelter by an American mining engineer and tenders will shortly be called for. The company is to erect a concentrating works at the mine and will do preliminary work in getting the mine in shape for the permanent hoisting apparatus for raising ore, etc. Ref. No. 5231.

An architect in South Africa wishes to obtain catalogs and price lists of concrete mixing machinery. Ref. No. 5235.

A Russian business man is desirous of securing an agency for American oil engines (naphtha), pumps and steam turbines. He can furnish bank references. Ref. No. 5239.

An American consul in India has received a letter from a business concern in his district requesting American motor car manufacturers and builders of marine gasoline engines to send copies of their catalogs and other descriptive literature with price lists and terms. The firm is in a co-operative society and does an extensive business. Ref. No. 5240.

An American consul in a Latin-American country reports that a company has been formed for the installation of an electric light plant in a local city. The company will install a plant of 75 to 100 horsepower. Correspondence and catalogs should be in Spanish. Ref. No. 5241.

An American consul in England states that a city in his district is about to undertake extensive street developments, the cost of which will amount to a large sum. He suggests that American manufacturers of road-making machinery communicate with the engineer in charge. Ref. No. 5243.

An American consul in the far east reports that owners of an ice manufacturing plant in his district intend to install a larger and more efficient plant. He also furnishes the name of another concern that has also expressed an intention of installing an ice plant. Ref. No. 5255.

A recent issue of the *Mexican Herald* states that the department of fomento has received 11 applications from different parties to use the waters of rivers and lakes in several states of the republic to generate electrical energy, for irrigation and other purposes. In all 60,682 liters of water per second will be used. Copy of the article, giving names and addresses of the applicants, can be obtained. Ref. No. 5260.

An American consul in an Asiatic country states that a local municipal government desires tenders for the construction of an electric tram line in that region. Ref. No. 5268.

An American consul has forwarded copies of calls with specifications for furnishing one 10-ton and seven 5-ton electric wharf cranes for an African port. Tenders will be received until Oct. 12, which gives American firms a chance to compete. A list of firms which can be approached by cable to act as agents for American bidders is given in the report, and the consul states that as the market is a growing and permanent one it is well worth trying for. Ref. No. 5274.

Detroit.

Automobile Plants Make General Shut Down and Shipment of Machinery Orders is Held Up.

Aug. 2.

Last week showed no change in the business conditions in Detroit. With very few exceptions, most of the automobile plants and the manufacturers of accessories are either shut down entirely or only working with greatly reduced force. Just how long this condition will last, no one can tell. The automobile manufacturers themselves welcome the lull, as it is giving them an opportunity to clean up their plants and prepare the tools and fixtures for 1911 output. A canvass of the various factories was made this week and in every case the managers are most optimistic as to the future. Most all of this year's cars have been sold and some of the factories are making deliveries of their 1911 models. It is not denied, however, that a buyer could get immediate delivery on almost any make of car he cared to pick out, which is evidence that the demand, for the time being, has been overtaken. The Buick Co. closed all of its factories yesterday and will not resume for two weeks. W. H. Little, factory manager, states it will, at the end of that time, start with a full force in all departments. The General Motors Co. has stopped all construction work and hence nothing is being done with the 60 acre site purchased in Detroit last fall, and on which a huge plant was to be erected. An interview with the officers of the company discloses the fact that it is their intention to proceed with all work in hand or under contemplation, as soon as the Buick plants resume. The change in conditions can hardly be realized by the machinery dealers as yet. So far there have been very few cancellations, only orders to hold up deliveries until further notice. It is needless to say there has been some business with a fair run of orders during the week. Quite a trade is being developed in fitting out repair shops for garages. This consists of a lathe, drill press, shaper and grinder. With such an outfit almost any simple repairs can be made without waiting for new parts from the factory.

One of the greatest pieces of news here this week is the statement of the Chalmers Motor Co. It has just declared a cash dividend of 30 per cent and a stock dividend of 900 per cent. This means an increase of the capitalization of the company from $300,000 to $3,000,000, this amount to be divided among the stockholders pro rata by raising the par value of the stock from $10.00 to $100.00 per share, none of the increase going on the market. All of this increase represents the new factories and the equipment installed in same.

C. H. Haberkorn has purchased between three and four acres on the D. & M. railway, between Theodore and Farnsworth streets, upon which he will erect a factory for the manufacture of motor trucks. The model truck is now being built and will be ready for testing in a short time. As soon as this is completed contracts will be placed for machinery and equipment.

Hamilton Carhartt Co., manufacturer of overalls, has just increased its capitalization from $500,000 to $1,000,000 to take over the Carhartt cotton mills, of Rock Hill, S. C. A portion of the new capital will be used to increase the capacity of the mills.

The Bailey Motor Truck Co. has just finished its first car, and if it proves satisfactory will immediately complete plans for putting in necessary equipment for turning the cars out. M. L. Pulcher, formerly with the Oakland Motor Car Co., has joined the company as manager.

It has been reported that the Abbott Car Co. has sold a controlling interest to parties in Pennsylvania. Just what disposition will be made of the company has not yet been announced.

The Princess Manufacturing Co. has plans prepared for the erection of a three and one-half story building 95 x 121 feet, adjoining its present factory.

Bates & Edmonds Motor Co., Lansing, Mich., is adding some new equipment.

The Hildreth Manufacturing Co., Lansing, Mich., is meeting with success in marketing its new gasoline engines and will shortly be in the market for further equipment.

The Kelsey Wheel Co. is making progress with its new shops and office building. Part of the wood working machinery was moved to the new location this week. Plans are now being drawn for another new building to take care of the large press equipment which the Toledo Machine & Tool Co. is building for the Kelsey Co.

H. W. Rickel & Co. have just placed contracts for a set of automatic kiln turning machines to be installed in their Detroit malt plant. These machines are said to be the largest of the kind built.

The Vulcan Gear Works, of Detroit, are reported as being about to build a plant at Pontiac, Mich.

The general contract for the new pumping station for the city has been let to F. H. Goddard, 910 Ford building, at $375,933. Smith, Hinchman & Gryllson are the architects.

The Monarch Mill & Grain Co., Whitesboro, Tex., wants a small electric lighting plant of about 200-light capacity; also boiler and engine.

Baltimore.

July Closed With Weak Machinery Market.—Several Important Buildings Under Construction.

Aug. 2.

The past week has been marked with considerable irregularity in the machine tool trade. There are no very big orders reported, the demand being for the main part along individual lines. In general machines the inclination turns rather toward new equipment than to second hand lines.

Crook, Kries & Co. have secured a big contract for the heating apparatus and power plant to be installed in the new fifteen story office building of the Fidelity & Deposit Co., of Baltimore, at its bid of $61,392. They have also recently secured contracts for heating apparatus and power plants at the House of Good Shepherd for colored girls, and Notre Dame college, both of Baltimore, and the Southern office building, Washington, D. C.

Some other big heating and power plant jobs will soon be on the market, to include the new million dollar Emerson hotel, the Munsey building, the Emerson Drug Co. building and the United States Fidelity & Guaranty Co. building.

A large machine possibility for the future is in connection with the six big mills of the Consolidated Cotton Duck Corporation here. These mills form part of the new International Cotton Mills Corporation of New York. The local mills that have been taken over by the new $20,000,000 corporation, have not been doing as much recently as in some former years. Whether there will be a general machinery overhauling and modernization, or whether some old machinery may soon be on the market without orders for new being placed is problematical. Local officers of the company say they expect a considerable extension of the activities here.

A large warehouse property at 25 West Baltimore street has been leased by the Archer Laundry Co., and it will soon be on the market for some machine specialties.

The bids for the erection of the pumping station for the city sewerage system have been rejected, through an error in a bid of $120,000 by a local firm. It was stated that the bid should have read $127,000, and permission was asked to correct the typographical mistake. This was refused by the board of awards, and new bids have been advertised for.

The Pittsburg Construction Co., of 787 Fifth avenue, New York, which is to build the new Henry Phipps laboratory of the Johns Hopkins hospital, is taking bids for various features of the construction. The cost of the building will be about $250,000.

The Southern Laundry Machinery Co. was incorporated here last week. The company will deal in machinery and its incorporators are Edward K. Morris, James W. Morton, John W. Lowe and George A. Llinefelter.

The Eutaw Baths Co., Baltimore, Md., wants prices on boilers and electrical equipment.

The entire plant of the Canton Iron & Steel Co. here is to be sold under a trustee's and receiver's sale on Aug. 17. The machinery of this plant, which has a capacity of about 20,000 tons of bar iron a year, is to be included in the sale. A large quantity of stove plate, scrap, boiler iron, bridge and structural iron, turnings, shaftings, etc., is to go under the hammer.

The William L. Ruhe Co., to deal in machinery, has been incorporated here. The incorporators are William L. Ruhe, Edwin H. Brownley and Isaac L. Lamm.

The Frederick Railway Co. has decided to erect a new power plant for the operation of its electric lines and plans will soon be exhibited. Other plans expected shortly for estimates are those of the Frederick Abattoir Co., which are being prepared by Architect P. A. Kly of Philadelphia.

Miscellaneous.

Bids will be received until Aug. 22 by the city clerk, J. E. Farnum, Miles City, Mont., for the furnishing of materials and construction work in connection with the water works, electric lighting and sewer systems for the city. Amongst the equipment called for is cast iron piping, hydrants, valves, steel tank of 200,000 gallons capacity, to be erected on a tower not less than 100 feet high; mechanical filter plant of four units each having a capacity of 500,000 gallons a day; pumping machinery, six turbine and centrifugal type motor driven units; two steam driven air compressors; one fully equipped air lift system for sewage pumping; one 250-kilowatt, 60 cycle, 3-phase, 2,300-volt generator; one 50-horsepower motor and two 15-kilowatt exciters; one 300-horsepower Corliss engine; all power station switchboard equipment; two 3-phase armatures for General Electric, 120-kilowatt single-phase generators now in use in lighting plant. Burns & McDonald, Scarritt building, Kansas City, Mo., are engineers.

Bids will be received by the village clerk of Brownstown, Wis., until Aug. 17 for furnishing and installing a 25-horsepower gasoline engine belt connected to an 18½-kilowatt generator; also for furnishing and erecting pole line for an electric light system. C. B. Stewart, 408 Wisconsin building, Madison, Wis., is engineer.

A hydro-electric development on the Nuangue river near Nonsuch, Mo., is planned by the Continental Power Development Co., of which W. E. Bradford, of Versailles, Mo., is secretary.

The Auto Power Co., which is building a large garage at Twenty-third and Market streets, Philadelphia, is in the market for a 300-light plant. It is also in the market for machine tools.

The Schwartzchild & Sulzberger Co. will build a $1,00,000 packing plant at Oklahoma City, Okla.

The city of Boulder, Col., will improve its water system at a cost of about $500,000.

Extensive shops and suburban business additions are to be built in West Sacramento, Cal., by the Northern Electric Railway Co., which will also construct a new terminal on the west side of the Sacramento river at the Yolo end of the bridge. The company has also a right of way and has decided to extend its line from Millville to Colusa.

The city of Foss, Okla., is contemplating the installation of a municipal electric light plant.

The Knoxville Railway & Light Co., Knoxville, Tenn., will erect an addition to its power house to cost about $8,000, and will install a 3,000-kilowatt turbine.

The Consumers Electrical Co., Wheeling, W. Va., contemplates the erection of a power plant to cost from $700,000 to $900,000. The city council is considering the proposition of granting an electric light franchise to the company.

The Foley Fertilizer Co., Foley, Ala., will build a 60 x 100-foot addition to its plant and will install fertilizer and feed grinding machinery, etc.

C. T. Shaw, of Natchez, Miss., will improve and enlarge his iron foundry.

J. W. Hiett, Iuka, Miss., will establish a plant for the manufacture of plows and harrows and spend about $8,000 on machinery, etc.

The Pratt-Messler Mfg. Co., St. Louis, Mo., will enlarge and improve its foundry at a cost of over $6,000.

The Fulton Market Co., Atlanta, Ga., will install a cold storage plant and an electrically driven compressor and double pipe condenser are included in the plans. S. J. Hill Jr., Atlanta, Ga., is the architect.

The Tennyson Bros., Texarkana, Ark., will install machinery for manufacturing metal pails, oil cans, etc.

An electric light, ice and water plant is to be erected at Kingston, Okla.

Swisher & Co., Cameron, Mo., are contemplating the installation of a cold storage plant.

Bonds to the amount of $15,000 will be issued by the city of Nephi, Utah, for improvements to the electric light plant and water works.

An election will shortly be held at Union, Ore., to vote on the issuance of $65,000 worth of bonds for installing a municipal electric light plant.

Improvements to the Newcastle, Pa., power house of the Chenango & Mahoning Valley Light & Heat Co., to cost $300,000 will shortly be commenced.

The city of Manguin, Okla., has voted to issue $25,000 worth of bonds for extensions to its water works.

Colton, Cal., will soon advertise for bids for the construction of a municipal sewerage system, for which $63,000 in bonds have been voted. Plans are being prepared by W. L. Brown, city engineer.

The waterworks system of Saugus, Mass., will be extended.

Mayor Moore, of Macon, Ga., has notified the Macon Gas, Light & Water Co. that it is the intention of the city to acquire its plants by purchase and operate them as a municipal plant at the expiration of the present contract

next year. Improvements and additions will then be made.

The citizens of Hammond, La., will shortly vote on the issuance of bonds for several public improvements, including the construction of a sewerage system.

The citizens of Charleston, S. C., are contemplating the issuing of $1,500,000 in bonds for the installation of a municipal water works.

F. H. Lancashire, of Dallas, Tex., is preparing plans for the construction of a waterworks system to be installed at Hamilton, Tex., at a cost of $15,000.

The Biwabik Mining Co., Biwabik, Minn., will enlarge its shops at a cost of $160,000.

The city of Altus, Okla., will spend $200,000 in improvements to the water, light and power system.

A new power house is to be erected in the near future by the Wheeling Traction Co., Wheeling, W. Va.

The city of Yukon, Okla., has voted to issue $30,000 in bonds for the construction of a water works system.

Two new boilers are to be installed at the Hotel Rudolph, Atlantic City, N. J.

The city of Decatur, Neb., is contemplating the installation of a municipal water works system.

The Granite Tunnel Co., Granite, Colo., will shortly commence work on the construction of an electric power plant.

A new power house is to be built by the Snyder Ice, Light & Power Co., of Snyder, Tex.

The People's Power Co., of Moline, Ill., is erecting a $500,000 gas and electric light plant.

The Otis Elevator Co., of Quincy, Ill., is making considerable additions to its plant.

The Taylor Motor Co., of Hutchinson, Kas., is erecting an addition to its plant.

A $75,000 plant will be erected by the Angldile Computing Scale Co., at Elkhart, Ind.

An addition to the plant of the General Motors Co., at Clyde, O., to be used as machinery building, will be erected in the near future.

The Thornton Light & Power Co., Hickory, N. C., will erect a hydroelectric power plant on the Catawba river, to develop 8,000 horsepower.

The Erwin Cotton Mill Co., West Durham, N. C., is contemplating the construction of a plant to furnish water for its bleachery and the town. The plant is to have a capacity of 1,500,000 gallons.

A contract will probably be let in September for the construction of a water works system for the city of Osyka, Miss. Xavier A. Kramer, of Magnolia, is the engineer.

The Premier Motor Mfg. Co., Indianapolis, Ind., will enlarge its plant and add a 2-story wind and an open machine shop with a saw tooth roof. A motor testing shop 50 x 130 feet, a storage stock room 100 x 50 feet, a road testing department and repair shop 100 x 50 feet and a machine shop and erecting room 490 x 90 feet will also be erected.

The American Agricultural Chemical Co., Savannah, Ga., is about to install a water works system for fire protection in its factory and will shortly receive bids.

The Russellville Water & Light Co., Russellville, Ark., is contemplating the construction of a water plant at Russellville, to cost $60,000. The company's offices are at Pine Bluff, Ark.

The Anderson Water, Light & Power Co., Anderson, S. C., will construct a pumping station on Bailey's Creek with 500,000 gallons daily capacity. H. S. Jaudon, Savannah, Ga., is in charge of the work.

A. M. Carter, engineer, Box 26, Reynolds, Ga., is in the market for an air compressor.

The Florida By-products Co., Atlanta, Ga., is in the market for boilers, engines and dryers for a fertilizer factory (humus).

Frank Wright, Cave Spring, Ga., is in the market for ice manufacturing machinery and family refrigerators.

W. M. Schockly, Lowell, Fla., is in the market for ice machinery.

The Virginia Blower & Heater Co., of Richmond, Va., is in the market for the following second-hand tools: (1) combination punch and shear, belt driven, capacity punch 13/16-inch holes through ⅜-inch plate or its equivalent, depth of throat 36 inches, right-angle drive; (2) 8-foot belt-driven square or gate shear, capacity No. 18 steel full length of plate; (3) bulldozer or bending machine for bending flats and angles cold, capacity for 1½ x 1¼ x 3-16-inch angle iron and 2 x ⅜-inch flats; (4) sensitive drill of either post or base type, maximum capacity ¼-inch hole, belt driven, revolving bed; (5) belt-driven trip hammer, 200 pounds, capacity to draw out 4-inch square iron; also for approximately 20,000 straight cultivator teeth about 1½ inches wide by 8 inches long; 12,000 straight spring steel teeth ¼-inch square and sharpened at one end; 65,000 curved spring steel weeder teeth about 18 inches long over all. The company wishes to correspond with manufacturers of material mentioned.

Frank Janes, Oak Grove, La., is in the market for six flat cars, four box cars, 2 passenger coaches and two locomotives.

The Blackstone Lumber & Mfg. Co., Blackstone, Va., wants a second-hand 80 to 100-horsepower boiler and engine.

The plant and personal property of the Canton Iron & Steel Co., Canton, Md., will be sold at public auction, Aug. 17, at noon. The order of sale was issued to the trustee and receivers of the Canton company under bankruptcy proceedings in the federal court of the district of Maryland on July 11, in an action brought by George L. Plitt et al. against The Iron & Steel Products Co., of New Jersey. The rolling mill has a capacity of 20,000 tons of bar iron annually. The personal property to be sold includes bar iron, scrap, etc.

NEW PRESIDENT

Of Westinghouse Electric is E. F. Atkins, of Boston.

At the meeting of the directors of the Westinghouse Electric & Mfg. Co., held here, July 29, Edwin F. Atkins, of Boston, a director of the company, whose term of office expires in 1912, was elected president of the company to succeed George Westinghouse. Robert Mather was re-elected chairman of the board.

Following the meeting a statement was given out announcing the election of the following officers: President, Edwin F. Atkins, who is a member of the firm of E. Atkins & Co., Boston, and who has been, since the re-organization of the company, a member of the board of directors; chairman, Robert Mather; vice president, E. M. Herr; second vice president, L. A. Osborne; third vice president and attorney, Charles A. Terry; acting vice presidents, G. W. Hebard and H. D. Shute; secretary, W. A. Esselstyn; treasurer and assistant secretary, T. W. Simon; assistants to the treasurer, H. F. Baetz and E. St. John; auditor and comptroller, James C. Bennett; assistant auditors, F. E. McCraig and W. D. Covil Jr.

Mr. Atkins, at the earnest solicitation of the board, accepted the election to the presidency, with the distinct understanding that his retention of the position is to be temporary and until the board shall elect a permanent successor.

BUILD AT SEATTLE.

The Berlin Machine Works, Beloit, Wis., manufacturer of wood-working and saw mill machinery, is considering the erection of a plant at Seattle to handle its business on the Pacific coast. The company has a large plant in Ontario, Can., and is planning to make the Seattle plant a duplicate of that, which will cost complete about $600,000 and employ about 400 men.

BUYS ROLLING MILL SITE.

The Greenberg Iron Co., Terre Haute, Ind., has purchased a 13-acre site formerly occupied by the Southern Rolling Mill Co., in that city. The Greenberg company proposes to build four buildings, each 50 x 100 feet, in which it plans to manufacture cast iron pipe, culverts, etc. The plant will be ready for operating the first of the year.

NEWS FROM MANY INDUSTRIES

(In order to assist the post offices in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers:—

The following manufacturing companies have filed articles of incorporation:

The Best Foundry Co., New Kensington, Pa.; $15,000; by C. M. Best, treasurer.

The Hotz Foundry & Mfg. Co., Fremont, O.; $25,000; by Alphonso Hotz and others.

The Standard Die Cutting Co., Detroit, Mich.; $25,000; by Charles F. Springman and E. J. Mamer.

The Bradley Iron Works, Milwaukee, Wis.; $25,000; by J. A. Wallis, August Moeller and H. C. Mullen.

The Steeley Automobile Engine Co., Detroit; $150,000; Charles M. Steeley and M. G. Delowney are the principal stockholders.

The Crucible Steel Castings Co., Cleveland; $25,000; by William Schmehl, A. H. Kaufman, H. L. Aiken, Charles W. Kaufman and William H. Aiken.

The Newark Machine Co., 57 Lafayette place, Newark, N. J.; machine shop; $50,000; by Joseph H. Gay, East Orange, N. J.; Herbert S. Gay and Charles P. Gay, both of Newark, N. J.

The High-Grade Foundries Co., New York City; $50,000; iron, steel, brass, etc.; by Jesse L. Snyder, Charles E. McMahon and David F. Price, all of No. 1 Liberty street, New York City.

The Atlas Water Tube Boiler Co., Westmont, N. J.; water tube boilers, etc.; $30,000; by Phillip J. Dougherty, Philadelphia; J. Barton Rettew, Philadelphia, and John Quincy Adams, Westmont, N. J.

Hyde Park Steel Castings Co., Hyde Park, Mass.; steel castings; $25,000; by President Simon J. Coleman, Dedham; Treasurer William M. Murray, Hyde Park, Mass.; Clerk and Attorney David W. Murray, Hyde Park, Mass.

New Construction:—

The New Britain Machine Co., New Britain, Conn., has awarded the contract for the construction of a five-story brick factory, 57 x 134 feet.

A permit has been issued by the San Bernardino, Cal., authorities for the construction of the proposed Santa Fe machine shops. The permit calls for an expenditure of $130,000.

The Bonner Mfg. Co., Chrisman, Ill., has decided to remove to Champaign, Ill., where it will build a much larger plant, having outgrown its present quarters.

Ground has been broken by the contractors, John P. Pettijohn & Co., of Lynchburg, Va., for the erection of a large brick and steel boiler shop for the Southern Railway Co., at Spencer, N. C.

The Birmingham Rail & Locomotive Works has placed an order for $25,000 worth of electrical equipment, which will be installed in the plant now being built by the company at North Birmingham, Ala.

The Whitney Mfg. Co., Hartford, Conn., maker of vehicle chains and specialties, has awarded the contract for the erection of an additional factory, five stories, 60 x 80 feet, of reinforced concrete.

The stock has been subscribed for the Ewer Tool & Wrench Co., which will locate its plant at Howell, Mich. As soon as the organization of the company is completed, the construction of the building will begin.

The National Acme Mfg. Co., Cleveland, has taken out a permit to construct a four-story factory building, at Stanton avenue S. E. and the C. & P. tracks. The building will have 20,000 square feet of floor space.

The Sharon Foundry Co., Wheatland, Pa., is having an addition to its plant built by Wallis & Carley, which will be used as a pattern shop and will be 60 x 65 feet, of iron and wood, with slate roof.

The George Whiting Co., Chicago, manufacturer of punches and shears, has purchased land at the corner of Elston and Wabansia avenues in that city and will proceed at once to build a machine shop to cost about $30,000.

The Victor Automobile Mfg. Co., St. Louis, has asked for bids for a proposed factory building to cost $100,000, and to be located at Boyle avenue and Papin street.

The erection of the steel work for the new main building of the Youngstown Iron & Steel Roofing Co., Youngstown, O., is being hurried along by the Hunter Construction Co. It is expected to have the contract completed in 30 days.

Officers of the recently formed Pneumatic Jack Co., which is planning to build a $50,000 plant in the locality of Birmingham, Ala., recently visited that city for the purpose of inspecting proposed sites for the plant.

The foundations for the proposed factory building of the Belvidere Screw & Machine Co., Belvidere, Ill., are being rapidly placed in preparation for the immediate construction of the buildings. A side track is being laid on the property of the company.

The Orange Iron Works, Orange, Tex., on account of greatly increased business, has made arrangements for doubling the capacity of the plant, and additional machinery is now being installed. E. M. Martin, formerly of Meridian, Miss., has been engaged as general superintendent.

The Aluminum Co. of America has let a contract for two new buildings at its New Kensington, Pa., plant, each 40 x 116 feet. One building will be used as a molding room, and the other as a warehouse. When the improvements are completed, additional workmen will be given employment.

The North & Judd Mfg. Co., New Britain, Conn., maker of saddlery hardware, has had plans prepared for two additional factory buildings, both to be constructed of brick. One building will be used for annealing purposes, and will be 70 x 94 feet; the other, 60 x 105 feet, will be an addition to the brass department.

The Victor Automobile Co., St. Louis, has had plans prepared for erecting a factory building to cost $100,000, at the corner of Boyle avenue and Papin street. Figures have been asked and the contracts will be let within a week. The proposed plant will more than double the capacity of the Victor company's present quarters.

Preparations are being made to start construction at once on the proposed boiler and machine shops for the Jackson & Church Co., Saginaw, Mich. The plans for the boiler shop provide for a building, 95 x 240 feet, of structural steel and brick. After this structure has been completed the machine shop construction will be undertaken.

The Monitor Sad Iron Co., Big Prairie, O., advises that it will build on its new site in Wooster, O., five buildings, 100 feet long and from 40 to 60 feet wide. Nearly all of the equipment has been bought and it is expected that the plant will be in

operation by the first of next year. The company's output, after moving to Wooster, will amount to from 6,000 to 8,000 pounds a month of self-heating irons.

General Industrial:—

The Kerns Machine Tool Co., Cincinnati, has increased its capital from $50,000 to $100,000.

The Crescent Forge & Shovel Co., Havana, Ill., has certified to an increase of capital stock from $75,000 to $100,000.

The Toledo Machine & Tool Co., Toledo, O., has just shipped to Harvey, Ill., one of the largest punch presses that the company ever built. It weighs 75 tons.

The newly constructed steel foundry of the Standard Steel Works, at Lewistown, Pa., has just been placed in active operation.

An involuntary petition in bankruptcy has been filed by creditors of the Chicago Steel & Brass Works, Chicago, with petitioning claims aggregating $1,520.40.

George E. Lloyd, of Mechanicsburg, Pa., has been appointed receiver for the Mechanicsburg Foundry & Machine Co., which was incorporated a year ago. The company's indebtedness is said to be small.

H. S. Jaudon Engineering Co., Savannah, Ga., has completed plans for an electric light plant to be erected at Dalton, Ga. Equipment will include a compound condensing engine, direct connected to generator, 500 horsepower.

An expenditure of over $100,000 will be made by the city council of Salt Lake City, Utah, for the construction of a new water main from City creek canyon. Surveys are now being made.

The Pittsburg Emery Wheel Co., Pittsburg, has made a change in its management. The present officers are: Charles G. Smith, president; J. Walter Hetzel, vice president and secretary, and Albert W. Smith, treasurer, David B. Hyde retiring.

Alvord & Burdick, engineers, 140 Dearborn street, Chicago, are preparing plans for two low-lift pumps of 12,000,000 gallons capacity each. Bids will be received up to 10 o'clock a. m., Sept. 20, by the board of water commissioners, Evansville, Ind.

The Fechheimer Steel & Iron Co. is arranging to remove its plant from New York to an 11-acre tract at Allentown, Pa. The business of the company is to dismantle plants and remove machinery from furnaces and foundries.

The St. Joseph Iron Works, St. Joseph, Mich., referring to some recently noted new construction, advises that it is erecting a two-story brick structure to be used exclusively for the storage of patterns. The building is about completed.

The business which has been operated under the firm name of Webster & Perks, at Springfield, O., has been incorporated as the Webster & Perks Tool Co., by Herman Voges Jr., G. W. Perks, A. W. Perks, R. C. Mitchell. The capital stock is placed at $25,000.

Receiver J. R. West has sold the machinery and plant of the Jonesboro Iron & Engine Works, Jonesboro, Ark., to A. W. Hall and Joseph Mason on their bid of $9,000. Some time ago Mr. Hall brought a chancery court suit asking that the company's affairs be placed in the hands of a receiver.

A new steam generating plant is to be constructed by the Hawks Electric Co., of Goshen, Ind. The equipment of the new plant will include two water tube boilers and a 500-kilowatt, 2,300-volt, 3-phase, alternating current generating set. F. J. Postel & Co., 279 Dearborn street, Chicago, are consulting engineers.

Wetherill Bros. Machine Co., Chester, Pa., has received a contract from the Panama Canal commission for a duplicate order of hydraulic dredge machinery furnished last September. The company recently completed building machinery for a large hydraulic dredge for the League Island Navy Yard, the pump alone weighing 31 tons.

The Valve Seating Tool Co., Southport, Conn., recently incorporated, advises that it was organized for the purpose of manufacturing valve seating tools which were designed by William E. Sherwood, one of the officers of the company. The company will make valve seating tools of three types, a portable electric tool, one for use in a drill press, and a hand tool. The company is now having its tools made, but expects to engage in manufacture later.

Ernest S. Cook has been appointed receiver of the Long-Arm System Co., of Cleveland, through proceedings brought in federal court. The petition asking for the appointment was filed by S. H. Chisholm, of New York, a director of the company, who stated that the company owed him $156,279.93. The company originally manufactured a system of closing watertight doors on shipboard, but of late had engaged largely in the manufacture of automobile parts, etc.

The Copper Roller Bearing Trolley Wheel Co., whose plant is located at West Coxsackie, N. Y., has been reorganized and the New York office removed to Coxsackie. The officers are: President, F. H. Sutherland; vice president, H. A. Jordan; secretary, treasurer and general manager, Edward S. Anthony, who together with F. F. Bedell and G. M. Ranner compose the board of directors. Additional machinery has been placed in the plant, and orders for the trolley wheel manufactured by the company are being steadily received.

A consolidation of practically all the wood-working machinery concerns in Canada, into the Canada Machinery Corporation, Ltd., has resulted in the election of the following officers: President, George D. Forbes, of Guelph; vice presidents, R. O. McCulloch, of Galt, R. McGregor Sr., of Galt, and S. H. White, of Sussex, N. B. These, together with the following, constitute the board of directors: T. H. Watson, of Toronto; Alec G. Gourlay, of Galt; Garnet P. Grant, of Montreal, and Harry Cockshutt, of Brantford, Ont.

Fires:—

The Hunt-Spiller Mfg. Co., South Boston, Mass., suffered a loss of about $8,000 on one of its foundries, July 9, the loss being covered by insurance.

The machine shop of Frick Bros., Syracuse, N. Y., was damaged, July 21, the loss on the building being estimated at $500 and on the stock at $2,000.

The plants of the Durand Steel Locker Co. and the Thomas Brass & Iron Co., Waukegan, Ill., were seriously damaged, July 26, the combined losses being estimated at $250,000.

The polishing, plate and auto wind shield department of the Cox Brass Mfg. Co., Albany, N. Y., was badly damaged, July 8. The loss, estimated at $15,000, is covered by insurance.

Sparks from a passing locomotive are believed to have caused a fire which did serious damage to a warehouse of the Neely Nut & Bolt Co., Pittsburg, July 22. The loss is estimated at $20,000, due to the destruction of a number of patterns.

The Sharon, Pa., plant of the Damascus Brake Beam Co. was badly damaged, July 21, the loss being placed at $100,000.